HOME MECHANICAL VENTILATION:
A Guide to Invasive and Noninvasive Ventilation
As many as 1.5 million patients per year require mechanical ventilators for respiratory support. For the vast majority of these patients, ventilator support is initiated in the acute care setting. Most patients are liberated/weaned from ventilator support, however there is a small but significant number that are unable to be liberated. It is these patients who become candidates for mechanical ventilation in the home.

Definitions

**Invasive ventilation** – machine-generated breath is delivered to the patient via an artificial airway (e.g., tracheostomy tube, or endotracheal tube).

**Noninvasive ventilation** – ventilator-generated breath is delivered to patient by mask or mouthpiece.

**Negative pressure ventilator** – airflow into the lungs is created by a noninvasive device that creates a negative pressure around the chest (e.g., cuirass)

**Positive pressure ventilator** – delivers room air or oxygen to the lungs of the patient with forced gas flow (positive pressure). The amount can be delivered in a preset volume or pressure and with either a noninvasive or invasive interface.

Any patient that has failed to wean from the ventilator in the hospital environment may be a candidate for similar treatment in the home. Many factors go into determining whether a chronic ventilator patient is able to transition to the home setting. These include:

- Caregiver support
- Home environment
- Payer support

**Caregiver support**

There must be a primary caretaker and a secondary support person, either a family member or nursing agency, appointed who will be responsible for taking instruction and demonstrating that they are able to act appropriately and with confidence and knowledge when the transition from hospital to home is made. Please note that most insurance companies consider home ventilation to be custodial care and will not pay for 24-hour nursing services.
Home Environment
In order for the transition from the hospital to the home to be successful, the home environment must be adequate for the care that is required. Below is a list of some of the issues that the HME will evaluate prior to discharge. If there are deficiencies noted in the home environment, the therapist assigned to your case will work with you to correct these concerns.

- Adequate number of grounded electrical outlets
- Proper amperage
- Size of room
- Condition of living quarters
- Adequacy of cleaning areas for proper equipment maintenance

Insurance coverage
Most insurance plans, including Medicare, cover home mechanical ventilation and accessories. There is little question that it costs a lot less to care for a patient in the home. The HME will follow a strict procedure in determining whether the funding is adequate to make a transition from the hospital to the home a reality. Some of the things that the Home Care Company will consider are listed below.

- Insurance coverage
- Nonprofit organizations
- Private funding
- Personal resources

Ventilators fall into the frequent and substantial servicing payment category. Coverage may vary between companies. Insurance verification is always required once an order has been received. Medicare will not pay for a backup system. A second ventilator system may be covered if:
  - A patient requires one type of ventilator for part of the day and another type the rest of the day.
  - A patient confined to a wheelchair requires a ventilator mounted on the wheelchair for day use.

General coverage guidelines/indications
Chronic respiratory failure due to COPD
Thoracic restrictive diseases
Neuromuscular disorders
  - Multiple sclerosis
  - Amyotrophic lateral sclerosis
  - Spinal cord injury

HCPCS Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E450</td>
<td>Volume control ventilator, without pressure support mode, may include pressure control mode, used with invasive interface.</td>
</tr>
<tr>
<td>E0461</td>
<td>Volume control ventilator, without pressure support mode, may include pressure control mode, used with noninvasive interface</td>
</tr>
<tr>
<td>E0460</td>
<td>Negative pressure ventilator; portable or stationary system</td>
</tr>
<tr>
<td>E0463</td>
<td>Pressure support ventilator with volume control, may include pressure control mode, used with invasive interface</td>
</tr>
<tr>
<td>E0464</td>
<td>Pressure support ventilator with volume control mode, may include pressure control mode, used with noninvasive interface</td>
</tr>
</tbody>
</table>
Bringing It ALL Together

After everything has been investigated and it is determined by the HME that the patient is a candidate to be accepted into its Home Mechanical Ventilation Program the respiratory therapist or nurse who has been assigned to your case will begin the training process. The HME will work directly with the patient’s physician, nurses and respiratory therapist at the hospital to be sure that the caregivers are adequately trained on the home care ventilator and all other aspects of care that are required for the patient. It is truly a team approach and everyone must work together in order to make the transition successful. Below is a list of things that must be completed prior to discharge.

1. Receipt of verbal order.
2. Complete Insurance Verification Form Notification and notify the Director of Respiratory Services and the Store Manager.
3. Obtain approval from above prior to discharge planning. (Will occur within 48 hours)
4. Care Coordination Conference with facility staff, caregiver, and physician to determine whether patient is a candidate for home ventilation.
6. Provide HME with a list of all equipment and monthly list of supplies that the patient will require. Send to the Director of Respiratory Services and Store Manager to obtain reimbursement approval.
7. Obtain signed prescription from physician. The prescription should contain medical justification, any supportive documentation, and a statement from the physician that he feels that the patient/caregiver is suitable for home ventilation and that he and his staff will be available for follow-up and consultation.
8. Delivery of equipment needed to the institution for safety checks by the Bio-Med Department (10 days prior to discharge).
9. Orientation of equipment with hospital staff as required.
10. Orientation of caregiver must be concluded two days prior to discharge.
11. Caregiver support of patient for a 24-hour period prior to discharge.
12. Patient must utilize ventilator five days prior to discharge.
13. Final home inspection.
14. Notify telephone, electric, fire, emergency and answering service in writing and by telephone.
15. Care Conference two days prior to discharge.
16. Complete all delivery paperwork and functional checks as required by HME Policy and Procedure and have physician sign the Plan of Treatment for Clinical Services (if applicable).
17. Practitioner on the day of discharge will review the patient chart and consult with physician and facility staff to be certain that patient/caregiver is prepared for discharge.
18. Practitioner will be available prior to patient being escorted home to be certain that the transport team understands the use of equipment.
19. Practitioner will meet patient/caregiver at the home to assist in setup of equipment and to continue orientation process. This will help to provide a smooth transition home.
20. Practitioner will begin follow-up schedule.
HOME VENTILATOR MANAGEMENT PROGRAM

Policies and Procedures

Table of Contents

1. Personnel Requirements
2. Physician Orders for Ventilator Services
3. Services Rendered
4. Rental/Purchase
5. Equipment Instruction
6. Equipment Orientation
7. Procedural Check-off Before Discharge
8. Discharge from Hospital
9. HME Follow-up
10. Backup Equipment
11. Emergency Procedures
Personnel Requirements

Policy
HME Company shall require physicians and practitioners to meet recognized standards and/or to agree to provide specific documentation in order to care for a patient receiving home ventilation. This is to ascertain that patients receiving home ventilation by HME Company shall receive quality care. The HME personnel who participate in home ventilator management program shall meet the following credentialing requirements:
• Respiratory Therapist (RRT, RCP, CRTT)
• Nurse (RN, LPN) with specialized training in patient care for mechanically ventilated patients.
• The above must meet all licensure requirements in the state where they practice.

Procedures
HME specialists must demonstrate competence in teaching and evaluation of patients/caregivers receiving mechanical ventilation. All clinicians involved in patient care shall demonstrate knowledge and ability to properly perform, teach, and evaluate the use of mechanical ventilators.

All clinicians shall be required to undergo an orientation program before participating in direct patient care. This orientation shall include knowledge and understanding of tracheostomy care and suctioning techniques.

The clinician shall have complete understanding of the following:
• Ventilator control panel and alarms of ALL ventilators used by the HME Company
• Tubing circuit
• Humidifier or heat moisture exchanger (HME)
• Cleaning procedures
• Nebulized medication for inhalation

The clinician shall follow all manufacturers’ recommendations about equipment usage.

HME personnel shall maintain a professional relationship with physicians at all times to ensure proper care and follow-up to the patient’s needs.

Effective Date:
Last Date Revised:
Physician Orders for Ventilator Services

Policy
The attending physician shall be responsible for providing written orders for all ventilator services.

Procedure
Specific written orders are required prior to discharge to home.

Complete Certificate of Medical Necessity shall include:
  a. Specific patient diagnosis
  b. Documentation supporting the medical appropriateness of continued home ventilator use
  c. Patient’s prognosis
  d. Estimated length of need
  e. Type of ventilator (positive pressure or negative pressure)
  f. Duration of daily use
  g. Tidal Volume
  h. Set Respiratory Rate
  i. FiO2
  j. Sigh Volume and rate (if applicable)
  k. Inspiratory flow rate/time (if applicable)
  l. I:E ratio (if applicable)
  m. Special instructions
  n. Mechanical dead space (if applicable)

The order may also include alarm settings, including high and low pressure limits.

Effective Date:
Last Date Revised:
Services Rendered

Policy
The goal of the home ventilator management program is to make the transition from the hospital to the home as seamless as possible for both the patient and the HME company/caregivers. The objective of the HME Company is to provide the services that allow the patient to return to the home environment. These services are to be provided in a professional and caring manner.

The HME Company will work closely with the patient’s physician, caregivers, and all others involved with the care of the patient. This will help ensure a proper treatment regime and maximize the therapeutic benefits of respiratory care in the home.

Procedure
HME Company shall provide specific services as outlined below.

1. All Respiratory Care Practitioners caring for patients on home ventilators shall be qualified as outlined in the company policy.

2. HME Company shall conduct a pre-discharge home assessment to be certain that the physical aspects of the home are adequate to house a patient on the ventilator.

3. HME Company shall set up the equipment in the hospital a minimum of five days in order to train the caregivers in the use of the ventilation equipment.

4. A complete lesson plan shall be followed and a check-off of the caregiver shall be completed prior to the discharge of the patient.

5. On the day of discharge, the practitioner shall be present to be certain that the equipment is working properly in the home and that the transition from the hospital to the home is smooth.

6. The practitioner shall follow up as specified in the follow-up schedule unless the patient has home nursing or the patient has been on home ventilation prior and training can be verified.

7. A Respiratory Practitioner shall be available 24 hours, seven days a week in the event of an equipment malfunction.

8. A secondary Respiratory Practitioner shall be available in the event the primary practitioner on call is unable to respond.

9. A branch location receiving a ventilator-dependent patient shall have a minimum of two practitioners available in order to provide adequate care and coverage for the patient.

10. The Respiratory Practitioner(s) on call shall be available to respond and physically be able to be in the patient’s home within one hour after the call is received by the answering service or staff personnel.
11. Prior to discharge from services, the Respiratory Practitioner shall review the chart to ascertain that all required paperwork is up to date and the physician has been properly informed.

12. A discharge planning meeting will be conducted with the discharge planning staff of the hospital to ascertain that all the requirements of discharge have been met as well as to update the staff of progress, needs, and to set a target date for discharge.

Skill assessment with each clinical visit shall include but not be limited to the following items:

- Ability to operate suction machine
- Ability to properly mix solutions used in airway suctioning and tracheostomy care
- Tracheostomy care
  - Changing tracheostomy dressings
  - Cleaning of inner and outer tracheostomy cannula
- Operation of manual resuscitation bag
Rental/Purchase

Policy
The HME Company provides the option to either rent or purchase ventilatory equipment.

Procedure
Ventilator Rental

- On a monthly basis, the ventilator specialist from the HME checks the patient and equipment.
- All equipment is maintained according to manufacturer specifications.
- The HME Company is responsible for proper mechanical function of the equipment ONLY.
- The HME Company will provide 24/7 service for emergencies to the patient and caregivers.
- Only the attending physician can make changes in the patients’ equipment prescription.
- A backup ventilator will be provided if it is deemed necessary for patient safety and ordered by the attending physician.
- Caregiver/family training prior to discharge from the hospital and changing of equipment, and training of hospital staff will be provided by the HME Company’s home ventilator staff prior to patient discharge.

Ventilator purchase

- The HME Company is not responsible for any damage to equipment due to misuse or abuse. These actions will void any warranty and dealer obligation.
- Service Contracts: For all purchased ventilators, the HME Company will offer service contracts. The service contacts are renewable on an annual basis and include monthly or quarterly equipment and patient assessments by qualified personnel. 24/7 emergency service is also covered under the agreement.
- No service contract: The purchaser is responsible for all equipment replacement after the manufacturer’s warranty is expired and the purchaser’s equipment will be sent to the manufacturer for necessary repairs. The purchaser is responsible for all charges for parts and service.
- After the manufacturer’s warranty has expired, all routine and non-routine maintenance become the responsibility of the purchaser.

Effective Date:

Last Date Revised:
Equipment Instruction

Policy

HME Company shall provide instruction to the patient, caregivers, nurses, and all others responsible for providing care for a patient on a ventilator in the home. The Respiratory Practitioner responsible for the case shall utilize established lesson plans and check offs to ensure that each aspect of ventilator care is addressed.

Procedure

1. The Respiratory Care Practitioner shall conduct a pre-discharge hospital visit in order to do the following:
   a. Review the patient chart and final physician orders.
   b. To establish rapport with the patient, family, and all other caregivers involved in the care of the patient.
   c. To introduce patient, family, and all other caregivers to the ventilator.
   d. To begin the process of detailed instruction and to begin checking all caregivers off as outlined in the “Home Ventilator Training Checklist.” The Respiratory Practitioner shall provide instruction until the caregiver(s) has demonstrated knowledge in use and care of ventilation and all other related equipment.

2. The Respiratory Care Practitioner shall be available on the day of discharge to provide further instruction at the home of the patient and to ensure that the transition from the hospital to the home is smooth.

3. During the first week the patient is at home, the Respiratory Practitioner shall provide support and instruction as needed. The practitioner shall assess the needs of the patient/caregiver in regards to opportunities for further instruction. The practitioner shall answer all questions and shall be available 24 hours a day to provide support or answer questions about the ventilator and related equipment.

4. The HME shall provide clinical services to each patient for at least the first month:
   Exception: If patient has home nursing or is an existing ventilator patient with another company and training can be verified, training and follow-up may be modified.
   a. Orders must be obtained from the physician for ongoing clinical services as outlined in the Clinical Service Policy.
   b. Orders must be obtained from the physician for one-time procedures, which do not require a plan of treatment if patients are not admitted to Clinical Services.

5. The Respiratory Practitioner shall visit the patient at least monthly to assess equipment performance, infection control and answer any question that may arise. During this monthly visit, the practitioner shall perform maintenance and functional checks as required.

6. The Respiratory Practitioner shall explain in detail what HME’s role is and what the patient caregiver can expect from the company.
Equipment Orientation

Policy
In order to provide a smooth transition from the hospital to home, HME will establish a detailed procedure for the orientation of the patient/caregiver and all others included in the care of the patient. This procedure will also include responsibilities of Home Care and responsibilities that HME deems the responsibility of the institution referring the patient.

Procedure

1. HME will provide orientation and training on all equipment related to the ventilator to the primary caregivers, home care nursing staff, and the staff of the institution where the patient may be located.

2. The actual ventilator that patient is going home on will be provided to the hospital 10 days, but not less than 5 days, prior to discharge. The hospital will be responsible for conducting an electrical function check prior to its use in the facility.

3. The hospital shall assist in the training of the primary caregiver in the following:
   - Tracheostomy Tube Changes
   - Tracheostomy Care
   - Suctioning
   - Cardiopulmonary Resuscitation (CPR)
   - Bag to tube ventilation

   **NOTE:** Unless Nursing is involved a minimum of two caregivers should be present.

4. The HME Practitioner shall witness the above skills and check the caregiver off on competence. The practitioner shall notify the institution if the caregiver is not proficient in any of the above and shall notify the staff that further instruction is needed. The discharge of the patient cannot occur until the caregiver has demonstrated competence in the above procedures.

5. All HME practitioners providing care to patients in the home will be a current provider in CPR. Home Care strongly recommends that anyone caring for a patient in the home who requires mechanical ventilation be formally trained in CPR.

6. The patient must utilize the home ventilator at least five days prior to discharge.

7. The caregiver must demonstrate competency in the appropriate use of the equipment at least 2 days prior to discharge. All orientation checks must be concluded with emphasis on maintenance, cleaning and trouble shooting of the equipment.

8. While in the hospital, the caregiver must provide primary care of the patient for a 24-hour period with hospital staff providing back up prior to discharge.

9. Upon receipt of the order for home ventilation, the Respiratory Care Practitioner shall conduct a home visit to assess the home environment. This is to ascertain that the home is adequate to receive a patient requiring home ventilation. All deficiencies shall be recorded on the Home Safety Assessment and presented to the physician and the institution staff. All major deficiencies will need to be corrected before final acceptance and discharge of the
patient. The practitioner shall conduct a final home inspection within 72 hours of discharge. (See Home Care’s Home Safety Ventilator Assessment)

10. It shall be the responsibility of HME to notify the following organizations in writing that the patient being discharged home and is receiving mechanical ventilation.

- Telephone Company
- Fire and rescue squad
- Electric Company (Note: Use form “Operation Rescue” for the above organizations)
- Home Care’s answering service (See answering service/agency notification.)
PROCEDURAL CHECK OFF PRIOR TO DISCHARGE

1. Receipt of verbal order.
2. Complete Insurance Verification Form Notification and notify the Director of Respiratory Services and the Store Manager.
3. Obtain approval from above prior to discharge planning (will occur within 48 hours).
4. Care Coordination Conference with facility staff, caregiver, and physician to determine whether patient is a candidate for home ventilation.
6. Provide HME with a list of all equipment and monthly list of supplies that the patient will require. Send to the Director of Respiratory Services and Store Manager to obtain reimbursement approval.
7. Obtain signed prescription from physician. The prescription should contain medical justification, any supportive documentation, and a statement from the physician that he feels that the patient/ caregiver is suitable for home ventilation and that he and his staff will be available for follow-up and consultation.
8. Delivery of equipment needed to the institution for safety checks by the Bio-Med Department. (10 days prior to discharge)
9. Orientation of equipment with hospital staff as required.
10. Orientation of caregiver must be concluded two days prior to discharge.
11. Caregiver support of patient for a 24-hour period prior to discharge.
12. Patient must utilize ventilator five days prior to discharge.
15. Care Conference two days prior to discharge.
16. Complete all delivery paperwork and functional checks as required by Home Care Policy and Procedure and have physician sign the Plan of Treatment for Clinical Services (if applicable).
17. Practitioner on the day of discharge will review the patient chart and consult with physician and facility staff to be certain that patient/ caregiver is prepared for discharge.
18. Practitioner will be available prior to patient being escorted home to be certain that the transport team understands use of equipment.
19. Practitioner will meet patient/ caregiver at the home to assist in setup of equipment and to continue orientation process. This will help to provide smooth transition home.
20. Practitioner will begin follow-up schedule.

Effective Date:
Last Date Revised:
DISCHARGE FROM HOSPITAL

Policy

HME shall have certain requirements prior to discharge of the patient to the home. The most crucial of all is communication among all of those involved in the care of the patient. This policy will help to ensure a smooth transition of the patient from the hospital to home or facility. All the below mentioned shall occur within 5 days prior to discharge unless other time frames are specified.

Procedure

1. Prior to discharge a final functional check will be conducted on all equipment.
2. A final Home Safety Assessment will be conducted.
3. On the day of discharge, the following will be conducted:
   a. Review of patient chart to be certain that all documentation and requirements have been met.
   b. Final consultation with physician and obtain a copy of the discharge summary.
   c. Final meeting with facility staff and caregiver.
4. It is recommended that the patient be accompanied by one member of the hospital staff while in transit from the hospital to the home.
5. The practitioner shall be available to see that the transport team understands use of equipment.
6. The practitioner shall meet the patient at the home to help set up equipment and to continue the orientation process.
HME FOLLOW-UP

Policy
HME shall provide scheduled follow-up to all patients receiving home mechanical ventilation. HME shall admit all patients to clinical services for the first month and as needed from that time forward unless the patient is admitted to Skilled Nursing Facility, has home nursing, or has been previously on home mechanical ventilator and training can be verified. The practitioner caring for the patient shall follow the Policy and Procedure as stated for Clinical Services. A qualified practitioner shall be on call 24 hours a day/ 7 days a week.

Procedure
1. All follow-up shall be conducted by a qualified practitioner whose competency has been verified by the Clinical Supervisor.
2. First Month Visit Schedule
   a. Week 1 – A clinical home visit shall be conducted every day for five consecutive days.
   b. Week 2 – A clinical home visit shall be conducted three times with two days of telephone follow-up.
   c. Weeks 3 and 4 – One clinical home visit will be conducted each week with two telephone follow-ups per week.
3. At the time of the final clinical visit, the practitioner shall evaluate the need for more clinical visits. If he/she determines that further clinical visits are needed, the practitioner shall complete a new Plan of Treatment and forward to the physician. If no further clinical visits are deemed necessary, the practitioner shall complete a discharge summary and forward to the physician.
4. The practitioner shall conduct one home visit per month to assess equipment functions.
5. During home visits, the practitioner shall complete Ventilator Follow-up Form and clinical progress notes if the patient is admitted to services.
6. All clinical follow-ups will be forwarded to the physician within five days unless the condition of the patient warrants immediate attention.
7. The practitioner will update the Clinical Supervisor weekly for the first month and monthly thereafter. If the patient’s condition changes or the patient requires further clinical visits, the Clinical Supervisor shall be notified immediately.
8. Patients who are in a Skilled Nursing Facility, have home nursing or have been previously on home machine ventilator and training can be verified shall be excluded from admission to Clinical Services. HME shall provide equipment support only.
BACKUP EQUIPMENT

Policy

HME shall maintain adequate backup support in the event of equipment malfunction. The branch shall maintain corresponding manufacturer’s ventilator in the branch in order to replace with like equipment.

Procedure

1. **Ventilators**
   
   Each branch providing ventilation shall maintain one backup ventilator for a maximum of five ventilators that are in use by patients. Each patient caregiver shall be provided with a manual self-inflating resuscitation bag in the event of equipment malfunction. As previously stated, the caregiver shall be provided instruction in its use.

2. **Internal Batteries**
   
   The ventilator’s internal battery is a lithium ion battery. The ventilator will automatically switch to the internal battery if the ventilator is disconnected from the AC power source and has no external battery to receive power from. The internal battery when functioning properly will power the ventilator from about three hours depending on battery condition and patient settings. Some ventilators also have a detachable internal battery that will give even more operational time without AC power.

3. **External Battery**
   
   HME shall provide a backup external battery for each patient receiving home ventilation. The battery that will be utilized is a marine type or gel-cell acid battery. Unlike an internal battery, these batteries do not have a memory and do not require routine maintenance. HME shall utilize a 12-volt, 75-8-amp hour battery. If this battery has been fully charged, it will power the ventilator for approximately 20 hours between charges. The patient’s ventilator must always be hooked to the external battery. The caregiver shall be trained in the proper connections for the 12-volt battery.

*Effective Date:*

*Last Date Revised:*
EQUIPMENT MAINTENANCE AND FUNCTIONAL CHECK

Policy
HME Company shall perform all equipment maintenance and functional checks as required by the manufacturer. This is to be certain that the equipment is safe for use and continues to operate as required. Only Respiratory Practitioners may provide maintenance and functional checks on mechanical ventilators unless the manufacturer has recommended a service that can only be provided by a trained Bio-Medical Technician or manufacturer recommended service center.

Procedure
See procedure as detailed in the Equipment Management Manual and manufacturer’s instructions.

Effective Date:
Last Date Revised:
EMERGENCY PROCEDURES

Policy
HME shall provide instruction to caregivers of patients receiving home mechanical ventilation in emergency procedures. The practitioner will document the caregivers’ proficiency in the areas listed below.

Procedure

1. Machine Failure
2. Immediately remove the patient from the machine and manually ventilate with the resuscitation bag device.
   a. Attempt to identify and correct the problem with the steps outlined in the trouble-shooting guide.
   b. If the above is not successful, continue to manually resuscitate patient and call the Home Care Practitioner immediately.
3. Power Failure
   a. Check to be certain that the ventilator has not been disconnected from the electrical outlet.
   b. Be certain the ventilator is operating on the external battery.
   c. Call the Home Care Practitioner immediately.
4. Obstructed Airway
   a. If the tracheostomy tube is either completely or partially obstructed, you will notice an increase in pressure to ventilate and the high-pressure alarm will sound with each breath.
   b. If the patient is not in distress, suction the patient.
   c. If the patient appears to be in distress, remove the patient from the ventilator and manually ventilate with 100 percent oxygen. (The patient may be difficult to bag if the tube is obstructed.) Attempt to suction the patient. Lavage may be required.
   d. Continue to evaluate the patient for skin color, pulse, and breathing difficulty.
   e. If you feel that the obstruction has been adequately removed, connect the patient back to the ventilator and observe.
   f. If the obstruction has not been removed, continue to manually ventilate the patient with 100 percent oxygen and call 911.
5. Emergency Reinsertion of the Tracheostomy Tube
   a. If the tracheostomy tube accidentally comes out it must replaced immediately.
b. The following should always be close to the patient care area:
   • Two Tracheostomy tubes (one the same size and the other one size smaller)
   • Face mask for manual resuscitator
   • Xeroform gauze
   • Water soluble lubricant
   • 100 percent oxygen source

c. Stay with the patient, reassure them, and assess for change in color, pulse, and breathing difficulty.

d. If the patient is in severe distress, hold Xeroform gauze over the stoma and ventilate the patient via mask to mouth with 100 percent oxygen.

e. After the patient’s color returns, lubricate the spare tracheostomy tube and attempt to insert into stoma.

f. If unable to insert, open the size smaller tracheostomy tube, lubricate and attempt to insert.

g. If you are unable to insert the smaller tracheostomy tube, continue to manually ventilate and call 911.

h. If the patient is not in severe distress repeat steps e-g.

i. If the tube is successfully inserted, stabilize the tube with the tracheostomy ties and notify the Home Care Practitioner of the event.

**Note:** This procedure must be part of the training process while the patient is in the hospital. Please refer to tracheostomy tube replacement policy in the Clinical Respiratory Manual for a more detailed description of the procedure.
Summary of Paperwork Required on Day of Discharge

1. Patient and Caregiver should receive:
   a. A copy of the operating manual for the ventilator
   b. Delivery form
   c. Assignment agreement
   d. Business card or posted HME contact numbers
   e. Ventilator and accessory equipment educational check list and patient information sheets.
   f. No smoking signs

2. At the office
   a. Submit necessary forms for billing
   b. Prepare a file including:
      • Patient’s name and address
      • Patient’s telephone number
      • Patient’s nearest relatives and caregivers
   c. Complete ventilator settings with copy of physician orders
   d. All training check offs and forms required by the policy.

Note: Verify that all signatures required have been obtained within the documentation.
Endnotes


Accreditation Standards

The accrediting agencies have not issued formal standards about mechanical ventilation.

To date, they refer to the AARC Clinical Practice Guidelines. These guidelines were published in the Respiratory Care journal in August 2007.

*A special thanks to the AARC for permission to include these guidelines in this manual.*
AARC Clinical Practice Guideline

Long-Term Invasive Mechanical Ventilation in the Home
—2007 Revision & Update

HIMV 1.0 PROCEDURE
The application of invasive mechanical ventilation and care of the patient-ventilator system in the home, as ordered by a physician.

HIMV 2.0 DESCRIPTION/DEFINITION
Mechanical ventilation may be defined as a life support system designed to replace or support normal ventilatory lung function. Ventilator dependence is caused by an imbalance between ventilatory capacity and demand. A ventilator-assisted individual (VAI) may require mechanical aid for breathing to augment or replace spontaneous ventilatory efforts to achieve medical stability or to maintain life. The patient eligible for invasive long-term mechanical ventilation in the home (HIMV) requires a tracheostomy tube for ventilatory support, but no longer requires intensive medical and monitoring services.1-6 This guideline refers to patients ventilated by positive pressure via a tracheostomy tube in the home.

2.1 The goals of HIMV are
2.1.1 To sustain and extend life1-6
2.1.2 To enhance the quality of life1-11
2.1.3 To reduce morbidity1-6,12-15
2.1.4 To improve or sustain physical and psychological function of all VAI and to enhance growth and development in pediatric VAI1-11
2.1.5 To provide cost-effective care

HIMV 3.0 SETTING
The setting is the home, which for the purposes of this guideline may be the patient’s home, a foster home, or a group-living environment1-6,16-19

HIMV 4.0 INDICATIONS
4.1 Patients requiring invasive long-term ventilatory support have demonstrated
4.1.1 An inability to be completely weaned from invasive ventilatory supportor

4.1.2 A progression of disease etiology that requires increasing ventilatory support.

4.2 Conditions that met these criteria may include but are not limited to ventilatory muscle disorders, alveolar hypoventilation syndrome, primary respiratory disorders, obstructive lung diseases, restrictive lung diseases, and cardiac disorders, including congenital anomalies1-6,16-20

HIMV 5.0 CONTRAINDICATIONS
Contraindications to HIMV include:

5.1 The presence of a physiologically unstable medical condition requiring higher level of care or resources than available in the home1-6 Examples of indicators of a medical condition too unstable for the home and long-term care setting are:

5.1.1 FIO2 requirement > 0.401-6
5.1.2 PEEP > 10 cm H2O1-6
5.1.3 Need for continuous invasive monitoring in adult patients1-6
5.1.4 Lack of mature tracheostomy
5.2 Patient’s choice not to receive home mechanical ventilation1-6,20-24
5.3 Lack of an appropriate discharge plan1-6
5.4 Unsafe physical environment as determined by the patient’s discharge planning team1-6

5.4.1 Presence of fire, health or safety hazards including unsanitary conditions1-6
5.4.2 Inadequate basic utilities (such as heat, air conditioning, electricity including adequate amperage and grounded outlets)1-6

5.5 Inadequate resources for care in the home
5.5.1 Financial1-6,25-28
5.5.2 Personnel
5.5.2.1 Inadequate medical follow-up1-6
5.5.2.2 Inability of VAI to care for self, if no caregiver is available1-6
5.5.2.3 Inadequate respite care for caregivers21-23,29,30
5.5.2.4 Inadequate numbers of competent caregivers1-6 A minimum of two competent caregivers are required.

HIMV 6.0 HAZARDS AND COMPLICATIONS
6.1 Deterioration or acute change in clinical status of VAI. Although ventilator-associated complications in the home are poorly documented, experience in other sites can be extrapolated. The following may cause death or require rehospitalization for acute treatment.

6.1.1 Medical: Hypocapnia, respiratory alkalosis hypercapnia, respiratory acidosis, hypoxemia, barotraumas, seizures, hemodynamic instability, airway complications (stomal or tracheal infection, mucus plugging, tracheal erosion, or stenosis), respiratory infection (tracheobronchitis, pneumonia, bronchospasm, exacerbation of underlying disease, or natural course of the disease1-6,14
6.1.2 Equipment-related: Failure of the ventilator, malfunction of equipment, inadequate warming, and humidification of the inspired gases, inadvertent changes in ventilator settings, accidental disconnection from ventilator, accidental decannulation1-6,31-36
6.1.3 Psychosocial: Depression, anxiety, loss of resources (caregiver or financial), detrimental change in family structure or coping capacity1-6,21-24,29,30,37,38

HIMV 7.0 LIMITATIONS
In the home care setting, making and implementing changes in the plan of care may take longer than in a health care facility.

HIMV 8.0 ASSESSMENT OF NEED
8.1 Determination that indications are present and contraindications are absent
8.2 Determination that the goals listed in 2.1 can be met in the home
8.3 Determination that no continued need exists for higher level of services
8.4 Determination that frequent changes in the plan of care will not be needed

HIMV 9.0 ASSESSMENT OF OUTCOME
At least the following aspects of patient management and condition should be evaluated periodically as long as the patient receives HIMV

9.1 Implementation and adherence to the plan of care
9.2 Quality of life
9.3 Patient satisfaction
9.4 Resource utilization
9.5 Growth and development in the pediatric patient
9.6 Change in prognosis
9.7 Unanticipated morbidity, including need for higher level site of care
9.8 Unanticipated mortality

HIMV 10.0 RESOURCES
10.1 Equipment
10.1.1 Ventilator(s)—Choice should be based on patient’s clinical need. Patient’s medical needs may dictate that more than one ventilator be provided.1-6
10.1.1.1 Ventilators chosen for home care must be dependable and easy for the intended caregivers to operate; small size and lightweight are desirable.
10.1.1.2 Mobility is frequently an essential element of the plan of care of the patient. The mechanical ventilator system chosen for such a patient should allow mobility.
10.1.2 With portable, volume-cycled ventilators, use of the SIMV mode increases work of breathing1-6
10.1.3 Complex and non-portable components are not recommended for HIMV but may be used to meet the needs of certain patients1-6
10.1.3.1 Ventilators powered by external compressed gas sources are less desirable1-6
10.1.3.2 A second ventilator should be provided for
10.1.3.2.1 Patients who cannot maintain spontaneous ventilation for 4 or more consecutive hours1-6
10.1.3.2.2 Patients who live in an area where a replacement ventilator cannot be provided within 2 hours1-6
10.1.3.2.3 Patients who require mechanical ventilation during mobility as prescribed in their plan of care

10.1.4 Preventive maintenance should be provided at the frequency recommended under manufacturer guidelines.

10.1.5 An adequate power source must be available to operate the ventilator consistent with patient needs. This may be supplied by one or more of the following methods.

10.1.5.1 Alternating current (AC) is the primary power source for most long-term care ventilators. Emergency AC power should be available in the long-term care facility.

10.1.5.2 Direct current (DC) by external battery may be used to allow mobility and as an emergency power source. The internal battery of the ventilator should be used only for short-term use. It should not be used as a primary source of power.

10.1.5.3 A portable generator may be recommended for the VAI if frequent power outages occur or if the home is in a remote location.

10.1.6 Alarms

10.1.6.1 A patient-disconnect (eg, low-pressure or low-exhaled-volume) and a high-pressure alarm are essential.

10.1.6.2 If patient disconnection is likely to produce a serious adverse effect, a remote alarm and a secondary alarm may be indicated. A secondary alarm may be based on chest-wall impedance and cardiac activity, exhaled volume, end-tidal CO₂, or pulse oximetry with alarm capabilities.

10.1.6.3 Audible alarms must be loud enough to be heard by caregivers in all areas of the home.

10.1.7 Humidification systems are essential for invasive mechanical ventilation. The type of system used is determined by the patient’s medical needs and the patient’s need for mobility. It may be appropriate for the patient to use more than one type of system, based on those needs.

10.1.7.1 Heated humidifier (temperature probes should be provided)

10.1.7.2 Heat - moisture exchanger (HME) can be used during transport and to enhance mobility and may be used in lieu of a heated humidifier if the HME is determined to meet the patient’s medical needs.

10.1.8 Ventilator circuit and accessories as medically indicated

10.1.9 Self-inflating resuscitation bag with tracheostomy attachments, oxygen port if oxygen is prescribed, and mask of appropriate size.

10.1.10 Replacement tracheostomy tube of appropriate size, plus a tube one size smaller should be available at all times.

10.1.11 Suction equipment including a battery-powered aspirator for patients who leave the home or when indicated as an alternate source in the event of a power failure.

10.1.12 Supplemental oxygen as medically indicated.

10.1.13 VAI must have an adequate means of communicating their needs/desires and have the means to summon help from their caregivers in the case of emergency.

10.1.14 VAI and caregivers must have functioning phone lines so that they can contact and be contacted by medical personnel in the case of emergency.

10.2 Personnel

10.2.1 Health care professionals capable of providing direct patient care and possessing demonstrated competencies to monitor and assess both the patient and equipment are essential. Health care professionals should be credentialed (RRT, CRT, RN) and/or licensed practitioners with documented knowledge and demonstrated competencies so as to:

10.2.1.1 Understand the patient’s disease, plan of care, goals, and the limitations of invasive mechanical ventilation.

10.2.1.2 Assess patient’s response to invasive mechanical ventilation.
10.2.1.3 Make recommendations for changes in respiratory management of patient, including weaning as necessary.2,3,5,6
10.2.1.4 Train and monitor lay caregivers.
10.2.1.5 Monitor patient’s ongoing ventilatory status.
10.2.1.6 Communicate results of assessment to the health care team.2,3,5,6
10.2.2 Lay caregivers (family members, personal care attendants, non-credentialed health care personnel such as nurse’s aides) can be taught tasks and techniques of care for a specific VAI. Appropriately trained lay caregivers must demonstrate competency in:

10.2.2.1 Proper set up, use, troubleshooting, and routine maintenance of the equipment and supplies.2,3,5,6,21,23,24,29,30,37-41
10.2.2.2 Identification of adverse patient response to invasive mechanical ventilation.2,3,5,6
10.2.2.3 Response to the hazards of invasive mechanical ventilation.2,3,5,6
10.2.2.4 Response to emergencies such as:
   10.2.2.4.1 Power failure
   10.2.2.4.2 Acute life threatening events such as accidental decannulation or medical deterioration of the patient
   10.2.2.4.3 Failure of the equipment or supplies
10.2.2.5 Appropriate infection control procedures.2,3,5,6
10.2.2.6 Use and application of any additional techniques required for ongoing care of the VAI, such as suctioning and the use of ancillary equipment.2,3,5,6

10.3 Finances: HIMV can only be instituted and maintained with adequate financial resources to provide the necessary equipment and personnel to manage the patient’s care.2,3,5,6,25,28

HIMV 11.0 MONITORING
The frequency of monitoring should be determined by the ongoing individualized care plan and be based upon the patient’s current medical condition.

11.1 After completing training, demonstrating competency and if directed in the VAI’s plan of care, the lay caregivers should monitor the following:

11.1.1 Patient’s physical condition (may include the following: respiratory rate, heart rate, color changes, chest excursion, diaphoresis and lethargy, blood pressure, body temperature)
11.1.2 Ventilator settings. The frequency at which alarms and settings are to be checked should be specified in the plan of care.
   11.1.2.1 Peak pressures
   11.1.2.2 Preset tidal volume or preset pressure control
   11.1.2.3 Frequency of ventilator breaths
   11.1.2.4 Verification of oxygen concentration setting or flow rate of oxygen bled into the ventilator system
   11.1.2.5 PEEP level (if applicable)
   11.1.2.6 Appropriate humidification of inspired gases
   11.1.2.7 Temperature of inspired gases (if applicable)
   11.1.2.8 Heat-moisture exchanger (HME) function (if applicable)
11.1.3 Equipment function.3,5
   11.1.3.1 Appropriate configuration of ventilator circuit.3,5
   11.1.3.2 Alarm function
11.1.3.3 Cleanliness of filter(s)—according to manufacturer’s recommendation
11.1.3.4 Battery power level(s)—both internal and external
11.1.3.5 Overall condition of all equipment
11.1.3.6 Self-inflating manual resuscitator—cleanliness and function

11.2 Health care professionals should perform a thorough, comprehensive assessment of the patient and the patient-ventilator system on a regular basis as prescribed by the plan of care. In addition to the variables listed in 11.1.1-11.1.3.6, the health care professional should implement, monitor, and assess results of other interventions as indicated by the clinical situation and anticipated in the care plan.

11.2.1 Pulse oximetry—should be used to assess patients requiring a change in prescribed oxygen levels or in patients with a suspected change in condition.3,5
11.2.1.1 A physician’s order for pulse oximetry must be obtained before oximetry testing is performed

11.2.2 End-tidal CO2—may be useful for establishing trends in CO2 levels.3,20
11.2.2.1 A physician’s order for end tidal CO2 monitoring must be obtained before end tidal CO2 monitoring is performed

11.2.3 Ventilator settings
11.2.4 Exhaled tidal volume
11.2.5 Analysis of fraction of inspired oxygen

11.3 Health care professionals are also responsible for maintaining interdisciplinary communication concerning the plan of care

11.4 Health care professionals should integrate respiratory plan of care into the patient’s total care plan.2,3,5,6 Plan of care should include

11.4.1 All aspects of patient’s respiratory care2,3,5,6
11.4.2 Ongoing assessment and education of the caregivers involved

HIMV 12.0 FREQUENCY:

12.1 The frequency of ventilation (and the patient’s ventilator-free time) is dictated by the patient’s physiologic needs and is determined in consultation with the patient’s physician.
12.2 The frequency of assessment of the VAI and the patient-ventilator system must be noted in the evolving total care plan as determined by the health care team, in conjunction with the VAI and their caregivers.

HIMV 13.0 INFECTION CONTROL

13.1 Both professional and lay caregivers should be aware of the potential for transmission of both chronic and acute infection from patient to caregiver and from caregiver to patient and should take the steps necessary to avoid that transmission. Aspects of avoidance include

13.1.1 Careful hand cleansing and barrier protection when appropriate
13.1.2 Careful disposal of medical waste
13.1.3 Maximizing protection of patient, family, and caregivers (eg, influenza immunization) and minimizing exposure to persons with acute infections (eg, limiting visitors with upper respiratory infections)

13.2 Evidence is lacking to support an optimal plan for changing and processing ventilator circuits and ancillary equipment in the home. The standard of care in the home is that ventilator circuits need not be changed more often than once each week. However, CDC guidelines and studies from institutional settings 42-44 suggest that ventilator circuits need only be changed when visibly soiled.

Revised by
Respiratory Home Care Focus Group:
Joan Kohorst MA RRT
Patricia Blakely RRT
Claude Dockter RRT
William Pruitt MBA RRT CPFT AE-C


REFERENCES

44. American Association for Respiratory Care. AARC Evidence-Based Clinical Practice Guideline: Care of the ventilator circuit and its relation to ventilator-associated pneumonia. Respir Care 2003;48(9):869-879.
Guide for Claims Filing

The following is a guide to assist provider with coding and reimbursement issues relating to home mechanical ventilators and their associated accessories. Coverage by Medicare is based on the following conditions:

a. Item must be eligible for a defined Medicare benefit category
b. Item must be reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member
c. The item must meet all applicable Medicare statutory and regulatory requirements.

For specific instructions, please reference your supplier manual or contact your DME administrative Contractor (DME MAC) medical director or provider helpline.

Ventilators are categorized by Medicare as items requiring *Frequent and Substantial Servicing*. Unless otherwise noted, reimbursement by monthly rental payments will include payment for supplies and accessories. Humidifiers are considered accessories and cannot be billed separately. Monthly rental payments also include payment for repair, maintenance, or replacement of equipment. It is the responsibility of the supplier to have an emergency plan in place to address mechanical failure of the equipment.

Positive and negative pressure ventilators are generally covered for treatment of:

- Neuromuscular disorders
- Thoracic restrictive diseases
- Chronic respiratory failure associated with chronic obstructive pulmonary disease
Second Ventilator Coverage

Many providers supply a second ventilator besides the primary unit. There is not a national Medicare guideline on submission for reimbursement on a second mechanical ventilator.

“The DME MAC published instructions regarding coverage of “back-up” equipment. These instructions state that a backup ventilator of the same or similar type provided at bedside as a precaution in a case of malfunction of the primary ventilator would not be covered. Backup equipment must be distinguished from multiple medically necessary items, which are defined as identical or similar devices, each of which meets a different medical need for the patient. Though Medicare does not pay separately for backup equipment, Medicare may make a separate payment for a second piece of equipment if it is required to serve a different purpose as determined by the patient’s medical needs. Examples of situations in which multiple piece of like equipment may be covered include:

1. A patient requires one type of ventilator (e.g. a negative pressure ventilator with a chest shell) for part of the day and needs a different type of ventilator (e.g., a positive pressure ventilator with a nasal mask) during the rest of the day.

1. A patient who is confined to a wheelchair requires a ventilator mounted on the wheelchair for use during the day and needs another ventilator of the same type for use while in bed. Without both pieces of equipment the patient may be prone to certain medical complications, may not be able to achieve certain appropriate medical outcomes, or may not be able to use the medical equipment effectively.”

When billing a second ventilator, suppliers are asked to enter the reason for medical necessity of the secondary ventilator in the NTE 2400 loop.

DME MACs differ regarding line item entry of primary and secondary ventilators. Please check with your DME MAC to verify claims submission requirements for two qualifying ventilators on the same claim form.
Billing Codes and Allowables

Medicare classifies ventilators in the *Frequent* and *Substantial Servicing* payment category. Therefore, the rental allowance for ventilators includes payment for accessories. Accessories used with rented ventilators should not be billed separately. Separate reimbursement for accessories may be considered with patient owned ventilators only.

<table>
<thead>
<tr>
<th>HCPCS Code</th>
<th>Equipment</th>
<th>Description</th>
<th>*Range of Medicare Allowable Amounts 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>E0450</td>
<td>PLV100 PLV102B Portable volume ventilator PB LP Series Portable Ventilator</td>
<td>Volume ventilator, without pressure support mode, may include pressure control mode, used with invasive interface (e.g., tracheostomy tube)</td>
<td>$871.49 - $1,025.28</td>
</tr>
<tr>
<td>E0461</td>
<td>PLV100 PLV102B Portable volume Ventilator PB LP series Portable Ventilator</td>
<td>Volume ventilator, without pressure support mode, may include pressure control mode, used with noninvasive interface (e.g., mask)</td>
<td>$871.49 - $1,025.28</td>
</tr>
<tr>
<td>E0460</td>
<td>Negative pressure ventilator</td>
<td>Negative pressure ventilator; portable or stationary</td>
<td></td>
</tr>
<tr>
<td>E0463</td>
<td>Trilogy100 Ventilator PB 540 &amp; Achieva ventilator</td>
<td>Pressure support ventilator with volume control mode, may include pressure control mode, used with invasive interface (e.g., tracheostomy tube)</td>
<td>$1,284.04 - $1510.63</td>
</tr>
<tr>
<td>E0464</td>
<td>Trilogy100 Ventilator PB 540 &amp; Achieva ventilator</td>
<td>Pressure support ventilator with volume control mode, may include pressure control mode, used with noninvasive interface (e.g., mask)</td>
<td>$1,284.04 - $1510.63</td>
</tr>
<tr>
<td>E0457</td>
<td>Chest Shell (Cuirass)</td>
<td>Interface used with negative pressure ventilation soft seal chest shell</td>
<td></td>
</tr>
<tr>
<td>E0459</td>
<td>Chest Wrap</td>
<td>Interface used with negative pressure ventilation Nu-Mo garments</td>
<td></td>
</tr>
<tr>
<td>E1399 Misc.</td>
<td>Porta-Lung portable ventilating chamber</td>
<td>Miscellaneous use for: complete body coverage for negative pressure ventilation</td>
<td></td>
</tr>
<tr>
<td>E04618</td>
<td>Breathing circuit</td>
<td>Tubing that delivers the breath generated by the ventilator</td>
<td>$8.11 - $9.54</td>
</tr>
</tbody>
</table>

*Medicare allowable amounts vary by geographic region*
Billing Codes for Accessories

Ventilator patients cared for in the home often require multiple types of equipment. Some examples of additional items often supplied that may be billed separately include tracheostomy supplies (tubes, dressings, trach care kits, etc.), dressing supplies, oxygen, wheelchairs, suction machines, compressor nebulizers therapy equipment and medications, hospital beds and Hoyer lifts.

Accessories

<table>
<thead>
<tr>
<th>HCPCS Code</th>
<th>Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4550</td>
<td>Humidifier</td>
<td>Durable for extensive supplemental humidification during IPPB treatment or oxygen therapy</td>
</tr>
<tr>
<td>E0555</td>
<td>Humidifier</td>
<td>Durable, glass or autoclavable plastic bottle type, used with regulator or flowmeter</td>
</tr>
<tr>
<td>E0560</td>
<td>Humidifier</td>
<td>Durable for supplemental humidification during IPPB treatment or oxygen therapy</td>
</tr>
<tr>
<td>E4618</td>
<td>Breathing Circuit</td>
<td>Tubing that delivers the breath generated by the ventilator</td>
</tr>
<tr>
<td>E4483</td>
<td>Moisture Exchanger</td>
<td>Disposable, for use with invasive mechanical ventilation</td>
</tr>
<tr>
<td>E4611</td>
<td>Battery</td>
<td>Battery, heavy duty, replacement for patient-owned ventilator</td>
</tr>
<tr>
<td>E4612</td>
<td>Battery cables</td>
<td>Battery cables, replacement for patient-owned ventilator</td>
</tr>
<tr>
<td>E04613</td>
<td>Battery charger</td>
<td>Battery charger, replacement for patient-owned ventilator</td>
</tr>
</tbody>
</table>
HME COMPETENCY ASSESSMENT
# Ventilator System Setup

<table>
<thead>
<tr>
<th>Procedure: Mechanical Ventilator-System Setup</th>
<th>Setting: Direct Patient Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-specific Patient Type:</td>
<td>Peer Review Final Evaluation</td>
</tr>
<tr>
<td>□ Adult</td>
<td>□</td>
</tr>
<tr>
<td>□ Infant</td>
<td>□</td>
</tr>
<tr>
<td>□ Geriatric</td>
<td>□</td>
</tr>
<tr>
<td>□ Pediatric</td>
<td>□</td>
</tr>
<tr>
<td>□ Adolescent</td>
<td>□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preliminary Steps</th>
<th>1 = Acceptable</th>
<th>2 = Unacceptable</th>
<th>3 = Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wash hands.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connects humidifier and adds sterile water or attaches HME.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Properly assembles breathing circuit.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attaches breathing circuit to ventilator correctly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connects electrical cord and/or pneumatic power.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activates the ventilator.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusts the ventilator controls to preliminary settings per manufacturer recommendations.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performs an Operational Verification Procedure as recommended by manufacturer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correctly performs Verification Procedure per company policy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determines the breathing circuit compression factor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checks and documents operational function of all audible and visual alarms.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyzes the fractional concentration of oxygen delivered.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verifies presence of spare manual bag and mask.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensures sterility of breathing circuit and ventilator.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documents the procedure.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quality of Performance (*Circle the appropriate number*)

5 – Outstanding Performance: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – Good Performance: Slight prompting required. No significant errors noted.

3 – Fair Performance: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – Poor Performance: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – Unacceptable Performance: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies (*Check those that apply*)

☐ Excessive time needed to complete procedure.
☐ Broke aseptic or sterile technique.
☐ Significant inaccuracy noted.
☐ Technique may be harmful to patient.
☐ Incorrect procedure/sequence.
☐ Incorrect equipment assembly/usage.
☐ Unable to correctly answer questions about rationale and/or theory related to the procedure.
☐ Other ____________________________

Action Plan (*Check One*)

☐ (4-5) No action necessary.
☐ (3) Additional practice of this procedure needed with occasional supervision.
☐ (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
☐ (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Preceptor: _____________________________ Date: _____________________________

Note: may be signed by designated peer if policy allows

Employee: _____________________________ Date: _____________________________
## Ventilator Setting Adjustment

<table>
<thead>
<tr>
<th>Employee:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting: Direct Patient Contact</td>
<td></td>
</tr>
</tbody>
</table>

### Age- specific Patient Type:
- [ ] Adult
- [ ] Infant
- [ ] Geriatric
- [ ] Pediatric
- [ ] Adolescent

### Preliminary Steps
- Acquires order for change.
- Obtains appropriate equipment and supplies.
- Inspects medical record for precautions/complications.
- Verifies physician order.
- Evaluates order for compliance with AARC Clinical Practice Guidelines.
- Ensures that setting adjustment is consistent with company policy.

### Patient Interaction and Equipment Preparation
- Correctly identifies patient.
- Explains procedure to patient.
- Properly assembles equipment if appropriate.
- Correctly adjusts prescribed ventilator settings.
- Re-adjusts necessary ventilator controls.
- Re-adjusts alarms, if appropriate.
- Re-adjusts pressure limit, if appropriate.
- Ensures adequate total gas flow rate.
- Analyzes inspired gas for prescribed oxygen concentration.
- Monitors response to change.
- Modifies procedure as necessary based upon patient response.

### Patient Evaluation and Termination of Procedure
- Ensures adequate ventilation following ventilator adjustment/mode modification.
- Takes appropriate action for adverse response and notifies appropriate personnel.

### Documentation and Records
- Records procedure and results in medical chart.
- Completes appropriate paperwork.
Quality of Performance *(Circle the appropriate number)*

5 – Outstanding Performance: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – Good Performance: Slight prompting required. No significant errors noted.

3 – Fair Performance: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – Poor Performance: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – Unacceptable Performance: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies *(Check those that apply)*

- Excessive time needed to complete procedure.
- Broke aseptic or sterile technique.
- Significant inaccuracy noted.
- Technique may be harmful to patient.
- Incorrect procedure/sequence.
- Incorrect equipment assembly/usage.
- Unable to correctly answer questions about rationale and/or theory related to the procedure.
- Other __________________________________________________________

Action Plan *(Check One)*

- (4-5) No action necessary.
- (3) Additional practice of this procedure needed with occasional supervision.
- (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
- (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Preceptor: ___________________________ Date: _______________________

*Note: may be signed by designated peer if policy allows*

Employee: ___________________________ Date: _______________________


# Ventilator System Check

<table>
<thead>
<tr>
<th>Employee:</th>
<th>Date:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Procedure:</th>
<th>Setting:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient/Ventilator System Check</strong></td>
<td><strong>Direct Patient Contact</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age-specific Patient Type:</th>
<th>Preliminary Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Adult</td>
<td>Obtains appropriate equipment and supplies.</td>
</tr>
<tr>
<td>☐ Infant</td>
<td>Inspects medical record for precautions/complications.</td>
</tr>
<tr>
<td>☐ Geriatric</td>
<td>Verifies physician order.</td>
</tr>
<tr>
<td>☐ Pediatric</td>
<td>Evaluates order for compliance with AARC Clinical Practice Guidelines</td>
</tr>
<tr>
<td>☐ Adolescent</td>
<td>Ensures that setting adjustment is consistent with company policy.</td>
</tr>
<tr>
<td>☐ Peer Review</td>
<td></td>
</tr>
<tr>
<td>☐ Final Evaluation</td>
<td></td>
</tr>
</tbody>
</table>

### Patient interaction and Equipment Preparation
- Correctly identifies patient.
- Explains procedure to patient.
- Properly assembles equipment if appropriate.
- Correctly adjusts prescribed ventilator settings.
- Re-adjusts necessary ventilator controls.
- Re-adjusts alarms, if appropriate.
- Re-adjusts pressure limit, if appropriate.
- Ensures adequate total gas flow rate.
- Analyzes inspired gas for prescribed oxygen concentration.
- Monitors response to change.
- Modifies procedure as necessary based upon patient response.

### Patient Evaluation and Termination of Procedure
- Ensures adequate ventilation following ventilator adjustment/mode modification.
- Takes appropriate action for adverse response and notifies appropriate personnel.

### Documentation and Records
- Records procedure and results in medical chart.
- Completes appropriate paperwork.
Quality of Performance *(Circle the appropriate number)*

5 – Outstanding Performance: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – Good Performance: Slight prompting required. No significant errors noted.

3 – Fair Performance: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – Poor Performance: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – Unacceptable Performance: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies *(Check those that apply)*

- [ ] Excessive time needed to complete procedure.
- [ ] Broke aseptic or sterile technique.
- [ ] Significant inaccuracy noted.
- [ ] Technique may be harmful to patient.
- [ ] Incorrect procedure/sequence.
- [ ] Incorrect equipment assembly/usage.
- [ ] Unable to correctly answer questions about rationale and/or theory related to the procedure.
- [ ] Other ______________________________

Action Plan *(Check One)*

- [ ] (4-5) No action necessary.
- [ ] (3) Additional practice of this procedure needed with occasional supervision.
- [ ] (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
- [ ] (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

Preceptor: _______________________________ Date: __________________________

*Note: may be signed by designated peer if policy allows*

Employee: _______________________________ Date: __________________________
# Ventilator Circuit Change

<table>
<thead>
<tr>
<th>Employee:</th>
<th>Date:</th>
<th>1 = Acceptable</th>
<th>2 = Unacceptable</th>
<th>3 = Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procedure:</strong></td>
<td><strong>Setting:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ventilator Circuit Change</strong></td>
<td><strong>Direct Patient Contact</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age-specific Patient Type:</strong></td>
<td>□ Peer Review</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Adult</td>
<td>□ Infant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Geriatric</td>
<td>□ Pediatric</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Adolescent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Final Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Preliminary Steps
- Obtains appropriate equipment and supplies.
- Inspect medical records for precautions/complications.
- Rules out contraindications to procedure.
- Correctly identifies indications for procedure and frequency of procedure per policy.
- Implements Universal Precautions.

## Patient Interaction and Equipment Preparation
- Correctly identifies patient.
- Explains procedure to patient.
- Correctly assembles clean breathing circuit.
- Fills clean humidifier with sterile water or obtains replacement HME.
- Attaches clean breathing circuit.
- Silences ventilator alarms for designated time.
- Bypasses humidifier with ventilator circuit tubing.
- Replaces humidifier or HME if appropriate.
- Disconnects used circuit from patient.
- Attaches “clean” replacement-breathing circuit to patient.
- Ensures that all ventilator alarms are activated.
- Adherence to Universal Precautions throughout procedure.

## Patient Evaluation and Termination of Procedure
- Ensures ventilation by observation, auscultation, measurement via Wright’s and capnometry if appropriate.
- Monitors peak pressure and artificial airway position before and after circuit change.
- Performs patients/ventilator system check.
- Processes equipment and supplies.

## Documentation and Records
- Records procedure and results in medical chart.
- Completes appropriate paperwork.
Quality of Performance *(Circle the appropriate number)*

5 – Outstanding Performance: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – Good Performance: Slight prompting required. No significant errors noted.

3 – Fair Performance: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – Poor Performance: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – Unacceptable Performance: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies *(Check those that apply)*

☐ Excessive time needed to complete procedure.
☐ Broke aseptic or sterile technique.
☐ Significant inaccuracy noted.
☐ Technique may be harmful to patient.
☐ Incorrect procedure/sequence.
☐ Incorrect equipment assembly/usage.
☐ Unable to correctly answer questions about rationale and/or theory related to the procedure.
☐ Other ________________________________

Action Plan *(Check One)*

☐ (4-5) No action necessary.
☐ (3) Additional practice of this procedure needed with occasional supervision.
☐ (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
☐ (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Preceptor: ____________________________ Date: _________________________

Note: may be signed by designated peer if policy allows

Employee: ______________________________ Date: _________________________
# Pulmonary Mechanics

<table>
<thead>
<tr>
<th>Employee:</th>
<th>Date:</th>
</tr>
</thead>
</table>

**Procedure:**  
**Spontaneous Pulmonary Mechanics**

**Setting:**  
**Direct Patient Contact**

<table>
<thead>
<tr>
<th>Age-specific Patient Type:</th>
<th>Setting:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Adult</td>
<td>☐ Peer Review</td>
</tr>
<tr>
<td>☐ Infant</td>
<td>☐ Final Evaluation</td>
</tr>
<tr>
<td>☐ Geriatric</td>
<td></td>
</tr>
<tr>
<td>☐ Pediatric</td>
<td></td>
</tr>
<tr>
<td>☐ Adolescent</td>
<td></td>
</tr>
</tbody>
</table>

### Preliminary Steps
- Obtains appropriate equipment and supplies.
- Inspects medical record for precautions/complications.
- Verifies physician order.
- Evaluates order for compliance with AARC Clinical Practice Guidelines
- Implements Universal Precautions.
- Reviews blood gases to determine oxygenation status and ability to tolerate tests.

### Patient Interaction and Equipment Preparation
- Correctly identifies patient.
- Explains procedure to patient and provides patient/family education.
- Confirms patient understanding.
- Washes hands and implements Universal Precautions.
- Properly assembles equipment and verifies delivered oxygen concentration
- Performs the following test and obtain results per policy:
  - a. Tidal Volume
  - b. Minute Volume
  - c. Ventilatory Rate
  - d. Forced Vital Capacity
  - e. Negative Inspiratory Force
  - f. Static Compliance

### Patient Evaluation and Termination of Procedure
- Monitors patient for respiratory distress during procedure, takes appropriate action for adverse response and notifies appropriate personnel.
- Modifies procedure as necessary based upon patient response.
- Compares actual to predicted values for patient and makes appropriate recommendations.
- Terminates procedure and processes equipment.

### Documentation and Records
- Records procedure and results in medical chart.
- Completes appropriate paperwork.
- Documents patient and family education.
Quality of Performance (*Circle the appropriate number*)

5 – Outstanding Performance: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – Good Performance: Slight prompting required. No significant errors noted.

3 – Fair Performance: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – Poor Performance: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – Unacceptable Performance: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies (*Check those that apply*)

☐ Excessive time needed to complete procedure.
☐ Broke aseptic or sterile technique.
☐ Significant inaccuracy noted.
☐ Technique may be harmful to patient.
☐ Incorrect procedure/sequence.
☐ Incorrect equipment assembly/usage.
☐ Unable to correctly answer questions about rationale and/or theory related to the procedure.
☐ Other __________________________________________________________

Action Plan (*Check One*)

☐ (4-5) No action necessary.
☐ (3) Additional practice of this procedure needed with occasional supervision.
☐ (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
☐ (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Preceptor: ___________________________ Date: _______________________

Note: may be signed by designated peer if policy allows

Employee: ___________________________ Date: _______________________

49
# Suctioning of the Artificial Airway

<table>
<thead>
<tr>
<th>Employee:</th>
<th>Date:</th>
</tr>
</thead>
</table>

## Procedure: Suctioning of Artificial Airway

<table>
<thead>
<tr>
<th>Setting: Direct Patient Contact</th>
</tr>
</thead>
</table>

## Age-specific Patient Type:

- [ ] Adult
- [ ] Infant
- [ ] Geriatric
- [ ] Pediatric
- [ ] Adolescent

### Preliminary Steps

- Obtains appropriate equipment and supplies.
- Inspects medical record for precautions/complications.
- Verifies physician orders.
- Evaluates order for compliance with AARC Clinical Practice Guidelines.
- Implements Universal Precautions.

### Patient interaction and Equipment Preparation

- Correctly identifies patient.
- Explains procedure to patient and provides patient/family education.
- Confirms patient understanding.
- Washes hands and implements universal precautions.
- Properly assembles equipment and selects the appropriate-sized catheter.
- Ensures stability of artificial airway; rescues airway if unstable.
- Pre-checks functions of catheter and negative pressure.
- Hyperinflates and hyperoxygenates patient before procedure, in between suction events, and after the procedure.
- Applies suction for 15 seconds or less.
- Maintains sterile technique.
- Suctions patient for not more than 15 seconds.
- Lavages patient per physician orders.
- Obtains sputum sample, if needed.
- Takes appropriate action for adverse response and notifies appropriate personnel.

### Patient Evaluation and Termination of Procedure

- Evaluates breath sounds before and after suctioning.
- Monitors ECG and/or oximeter throughout procedure if applicable.
- Processes equipment and supplies.

### Documentation and Records

- Records procedure and results in medical chart.
- Completes appropriate paperwork.
- Documents patient and family education.
Quality of Performance *(Circle the appropriate number)*

5 – Outstanding Performance: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – Good Performance: Slight prompting required. No significant errors noted.

3 – Fair Performance: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – Poor Performance: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – Unacceptable Performance: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies *(Check those that apply)*

☐ Excessive time needed to complete procedure.
☐ Broke aseptic or sterile technique.
☐ Significant inaccuracy noted.
☐ Technique may be harmful to patient.
☐ Incorrect procedure/sequence.
☐ Incorrect equipment assembly/usage.
☐ Unable to correctly answer questions about rationale and/or theory related to the procedure.
☐ Other ______________________________________________________________

Action Plan *(Check One)*

☐ (4-5) No action necessary.
☐ (3) Additional practice of this procedure needed with occasional supervision.
☐ (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
☐ (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Preceptor: _________________________________ Date: __________________________

Note: may be signed by designated peer if policy allows

Employee: _________________________________ Date: __________________________
# Artificial Airway Care

<table>
<thead>
<tr>
<th>Procedure:</th>
<th>Setting:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial Airway Care</td>
<td>Direct Patient Contact</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age-specific Patient Type:</th>
<th>Peer Review</th>
<th>Final Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geriatric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1 = Acceptable</th>
<th>2 = Unacceptable</th>
<th>3 = Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Steps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtains appropriate equipment and supplies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspects medical record for precautions/complications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verifies physician order.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluates order for compliance with AARC Clinical Practice Guidelines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implements Universal Precautions.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Patient Interaction and Equipment Preparation |                   |                    |
| Correctly identifies patient. | | |
| Explains procedure to patient and provides patient/family education. | | |
| Confirms patient understanding. | | |
| Washes hands and implements universal precautions. | | |
| Properly assembles equipment and supplies | | |
| Assess the need for suctioning before beginning. | | |
| Hyper oxygenates patient if required. | | |
| Removes patient inner cannula. | | |
| Inserts clean inner cannula. | | |
| Ensures adequacy of ventilation. | | |
| Cleans area around stoma noting any redness or sign of infection. | | |
| Applies trach dressing and ensures stability of tube. | | |
| Monitors cuff volume and/or cuff pressure. | | |
| Maintains minimal leak around cuff. | | |

| Patient Evaluation and Termination of Procedure |                   |                    |
| Auscultates chest to ensure tube patency. | | |
| Checks trach size. | | |
| Process equipment and supplies. | | |

| Documentation and Records |                   |                    |
| Records procedure and results in medical chart. | | |
| Completes appropriate paperwork. | | |
| Documents patient and family education. | | |
Quality of Performance *(Circle the appropriate number)*

5 – **Outstanding Performance**: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – **Good Performance**: Slight prompting required. No significant errors noted.

3 – **Fair Performance**: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – **Poor Performance**: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – **Unacceptable Performance**: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies *(Check those that apply)*

- [ ] Excessive time needed to complete procedure.
- [ ] Broke aseptic or sterile technique.
- [ ] Significant inaccuracy noted.
- [ ] Technique may be harmful to patient.
- [ ] Incorrect procedure/sequence.
- [ ] Incorrect equipment assembly/usage.
- [ ] Unable to correctly answer questions about rationale and/or theory related to the procedure.
- [ ] Other ______________________________________________________________

Action Plan *(Check One)*

- [ ] (4-5) No action necessary.
- [ ] (3) Additional practice of this procedure needed with occasional supervision.
- [ ] (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
- [ ] (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

Preceptor: ___________________________ Date: _________________________

*Note: may be signed by designated peer if policy allows*

Employee: ___________________________ Date: _________________________
# Tracheostomy Tube Replacement

<table>
<thead>
<tr>
<th></th>
<th>Date:</th>
<th>1 = Acceptable</th>
<th>2 = Unacceptable</th>
<th>3 = Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employee:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tracheostomy Tube Replacement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Setting:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Direct Patient Contact</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age-specific Patient Type:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geriatric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Peer Review</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Final Evaluation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Preliminary Steps</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquires order.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtains appropriate equipment and supplies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspects medical record for precautions/complications.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verifies physician orders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluates order for compliance with AARC Clinical Practice Guidelines.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patient interaction and Equipment Preparation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correctly identifies patient.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explains procedure to patient and provides patient/family education.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirms patient understanding.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washes hands and implements Universal Precautions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Properly assembles equipment and selects the appropriate-sized catheter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stabilizes patient’s head and neck.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puts on sterile gloves and suctions patient.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checks tube cuff.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inserts “tube changer” guide.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deflates cuff and removes existing tube.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintains stoma patency.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inserts new tube and inflates cuff.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintains aseptic technique.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performs stoma care and secures the trach tube after insertion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suctions patient if needed.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patient Evaluation and Termination of Procedure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checks tube placement by auscultation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observes chest for symmetrical chest excursion.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auscultates chest for breath sounds.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takes appropriate action for adverse response and notifies appropriate personnel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Documentation and Records</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Records procedure and results in medical chart.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completes appropriate paperwork.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documents patient and family education.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quality of Performance *(Circle the appropriate number)*

5 – Outstanding Performance: No prompting required, employee demonstrates mastery of the procedure. No errors noted.

4 – Good Performance: Slight prompting required. No significant errors noted.

3 – Fair Performance: Minor errors noted in next section. Some prompting or intervention required. Deficiencies specified in next section.

2 – Poor Performance: Significant errors noted. Much prompting required. Deficiencies specified in next section.

1 – Unacceptable Performance: Employee was unable to perform procedure without intervention by preceptor. Deficiencies specified in next section.

Performance Deficiencies *(Check those that apply)*

- ☐ Excessive time needed to complete procedure.
- ☐ Broke aseptic or sterile technique.
- ☐ Significant inaccuracy noted.
- ☐ Technique may be harmful to patient.
- ☐ Incorrect procedure/sequence.
- ☐ Incorrect equipment assembly/usage.
- ☐ Unable to correctly answer questions about rationale and/or theory related to the procedure.
- ☐ Other __________________________________________________

Action Plan *(Check One)*

- ☐ (4-5) No action necessary.
- ☐ (3) Additional practice of this procedure needed with occasional supervision.
- ☐ (2) Additional practice of this procedure needed under DIRECT clinical supervision. Repeat evaluation is required.
- ☐ (1) Remedial work needed with evaluation repeated after remediation. Suspension of performing this procedure until remediation and acceptable evaluation completed.

Additional comments:

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________

Preceptor: _______________________________   Date: _________________________

*Note: may be signed by designated peer if policy allows*

Employee: _______________________________ Date: _________________________
**INITIAL RESPIRATORY ASSESSMENT**

Patient: ____________________ Date of Birth: ___________ Physician: ___________

Diagnosis: ____________________ Secondary Diagnosis: ____________________

Eq and Settings: ___________ HT ________ WT ________

### VITAL SIGNS:
- Pulse ________/Min
- Breaths ________/Min
- Breath pattern ____________ B/P ________ mmHg

### PHYSICAL/MENTAL OBSERVATIONS

**LUNGS:**
- Orthopnea: [ ] Yes [ ] No
- Dyspnea: [ ] Yes [ ] No
- Duration, onset factors

### AUSCULTATION:
- [ ] Clear/Bilateral
- [ ] Rales: [ ] RT [ ] LT [ ] Bilateral
- [ ] Crepitant: [ ] RT [ ] LT [ ] Bilateral
- [ ] Wheezing: [ ] RT [ ] LT [ ] Bilateral
- [ ] Diminished: [ ] RT [ ] LT [ ] Bilateral

If diminished, state location:

### COUGH:
- [ ] Productive [ ] Dry/Non productive
- [ ] Hemoptysis: [ ] Yes [ ] No
- Mucus expectoration Amt: [ ] Large [ ] Medium [ ] Small
- Mucus color: ____________________
- Mucus texture: ____________________

### SKIN:
- Edema: [ ] 1+ [ ] 2+ [ ] Pitting - Location ____________________
- Cyanosis: [ ] Mild [ ] Moderate [ ] Severe
- Clubbing: [ ] Mild [ ] Moderate [ ] Severe

### MENTAL STATUS:
- Lethargic [ ] Comatose [ ]
- Agitated [ ] Depressed [ ] Orientated [ ] Disoriented

Other, explain:

### THORAX/NECK:
- Chest retractions: [ ] Yes [ ] No
- Accessory muscle: [ ] Yes [ ] No
- Paradoxic thorax: [ ] Yes [ ] No
- Chest deformities: [ ] Yes [ ] No
- Tracheostomy in use: [ ] Yes [ ] No
- Cuff operation: [ ] OK [ ] Not OK
- Last trach change: ____________________
- Cuff manometry: ____________________
- Problems with stoma: [ ] Yes [ ] No
- If yes, describe:

### DIET/NUTRITION:
- Push fluids: [ ] Hold liquids
- Oral supplements: [ ] Enteral feeding
- Parental feeding: ____________ Type ______ Site ______
- Regular diet: ____________________
- Describe: ____________________

### ACTIVITIES PERMITTED:

### TB TEST:
- [ ] Yes [ ] No DATE: ____________________

### ADVANCED DIRECTIVE:
- [ ] Yes [ ] No EXPLAIN: ____________________

### SAFETY CONCERNS:

### CAREGIVER OTHER THAN SELF?
- [ ] Yes [ ] No (NAME): ____________________

### COMMENTS:

### CONCLUSION AND PLAN FOR THE PATIENT:

THERAPIST NAME: ____________________ (Print) SIGNATURE: ____________________ DATE: ____________________

PATIENT'S SIGNATURE: ____________________ DATE: ____________________
**MEDICATION PROFILE**

Patient's Name: ________________________________

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>Frequency</th>
<th>Route</th>
<th>Start Date</th>
<th>Stop Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_________________________                    Date: ________________

Therapist’s Signature
Respiratory Care Informed Consent
Clinical Services

I, ____________________________, do hereby consent to receive clinical services in my home or alternative setting as prescribed by my physician. I understand the risks and benefits of this therapy. I understand that I have the right to discontinue my participation in this program at any time. By my signature below, I acknowledge that the Respiratory Practitioner has explained to me the services I am to receive, including all the risk associated with this therapy/procedure. The Respiratory Practitioner has satisfactorily answered all my questions, and I agree to proceed with therapy.

_____________________________  _______________________
Signature of Patient/Caregiver          Date

_____________________________  _______________________
Signature of Parent/Guardian          Date

_____________________________  _______________________
Witness                          Date
# RESPIRATORY SERVICES
## PATIENT HISTORY

Patient Name:

## DIAGNOSIS
- Primary: 
- Secondary: 

## HEAD/NECK
- Cushingoid
- Alopecia

## EYES/EARS
**EYES:**
- No Problem
- Blind
- Decreased Vision

**EARS:**
- No Problem
- Deaf
- Decreased Hearing

## SKIN
- No Problem
- Bruise(s)
- Drainage
- Edema
- Erythema/Redness
- Fistula
- Itching
- Lesions
- Moist
- Poor turgor
- Rash/Petechiae
- Warm and Dry
- Wound

## NEUROLOGICAL
- No Problem
- Headache
- Seizures
- Numbness/Tingling
- Fine
- Gross
- Tremors
- Alert/Oriented
- Comatose
- Disoriented
- Memory Loss

## MENTAL STATUS

## FUNCTIONAL LIMITATIONS

## RESPIRATORY
- No Problem
- Dyspnea on exertion
- Dyspnea at rest
- Tachypnea
- SOB at rest
- COUGH
- Dry
- Productive
- SECRECTIONS Amount

## MUSCULOSKELETAL
- No Problem
- Contracture
- Swelling
- Weakness
- Stiffness
- Motor Deficit:
  - Amputation
  - Poor Coordination
  - Paraplegic
  - Hemiplegic
  - Quad-pelagic
- ADL:
  - Independent
  - Dependent
  - Assistance Required
- Activities:
  - Crutches
  - cane
  - Walker
  - Wheelchair
  - Prosthesis
- Bedrest (specify)

## CARDIOVASCULAR
- No Problem
- Orthopnea
- Diaphoresis
- Chest Pain
- SOB
- Rhythm
- Regular
- Irregular
- Edema
- Non-pitting
- Pitting

## PSYCHOSOCIAL
Caregiver Profile (Name, Relationship, Age, Availability, Phone): 

## SPECIAL POPULATION INFORMATION
- Immunization UTD
- Yes
- No
- If no, is MD aware?
- Yes
- No
- TB skin test?
- Yes
- No
- When? 
- Result? 

## NUTRITIONAL SCREEN
- Has lost or gained 10 pounds (or more) in the past 6 months.
- Body mass index < 22
- Body mass index > 27
- Body Mass Index (BMI)

Formula to calculate BMI: $BMI = \frac{lb}{(ht \text{ in inches})^2 \times 703.1}$
# HOME HEALTH CERTIFICATION AND PLAN OF TREATMENT

1. **Patient HI Claim No.:**  
2. **Start of Care Date:**  
3. **Certification Period:**  
   - From:  
   - To:  
4. **Medical Record No.:**  
5. **Provider No.:**

6. **Patient's Name and Address:**  
7. **Provider's Name, Address and Telephone Number:**

8. **Date of Birth:**  
9. **Sex:**  
   - Male  
   - Female  
10. **Medications:**  
    - Dose/Frequency/Route (N)ow (C)hanged:

11. **ICD-9-CM**  
    - Principal Diagnosis:  
    - Date:
12. **ICD-9-CM**  
    - Surgical Procedure:  
    - Date:
13. **ICD-9-CM**  
    - Other Pertinent Diagnoses:  
    - Date:

14. **DME and Supplies:**

15. **Safety Measures:**

16. **Nutritional Requirements:**

17. **Allergies:**

18. A. **Functional Limitations:**  
    - Amputation  
    - Bowel/Bladder  
      - (incontinence)  
    - Contracture  
    - Hearing  
    - Paralysis  
    - Legally Blind  
    - Endurance  
    - Dyspnea with Minimal Exertion  
    - Amputation  
    - Other (specify)  

   18.B. **Activities Permitted:**  
    - Complete Bed Rest  
    - Partial Weight Bearing  
    - Wheelchair  
    - Bed Rest BRP  
    - Independent At Home  
    - Walker  
    - Up As Tolerated  
    - Crutches  
    - No Restrictions  
    - Transfer Bed/Chair  
    - Cane  
    - Other (Specify)

19. **Mental Status:**  
    - Oriented  
    - Forgetful  
    - Disoriented  
    - Agitated  
    - Comatose  
    - Depressed  
    - Lethargic  
    - Other

20. **Prognosis:**  
    - Poor  
    - Guarded  
    - Fair  
    - Good  
    - Excellent

21. **Orders for Discipline and Treatments (Specify Amount/Frequency/Duration):**

22. **Goals/Rehabilitation Potential/Discharge Plans:**

23. **Therapist's Signature and Date of Verbal SOC Where Applicable:**

24. **Date HHA Received Signed POT:**

25. **Physician's Name and Address:**

26. **Attending Physician's Signature and Date Signed:**
Respiratory Care Progress Notes

Patient Name: ______________________________ Date: __________________

Physician Name: ______________________________

Subjective Data: __________________________________________________________

________________________________________________________________________

________________________________________________________________________

Objective Data: BP: _____ Pulse: _____ Respiration: _____ Oxygen Saturation: ___ on ___ LPM

Breath sounds: ____________________________________________________________

Integument: __________________________________________________________________

Equipment: __________________________________________________________________

Equipment Function Test: __________________________________________________________________

Assessment (Needs and Problems): __________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Plan (Goals): __________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Other Service & Actions: __________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Patient/Caregiver Signature: ________________________________________________

Practitioner’s Signature: __________________________________________________

Next Visit: __________________________
Respiratory Clinical Services Discharge Summary

Patient Name: ____________________________ Date of Discharge: _______________________

Physician Name: __________________________ Date of Admission: _______________________

Reason for discharge (if due to transfer please note where transferred to and a contact person):

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Problems identified and goals set at the time of admission:

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Goals met at the time of discharge:

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Overall status of the patient at time of discharge:

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Summary of care/services provided:

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Comments:

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

Practitioner’s Signature: ____________________________ Date: _______________________

63
Physician Communication

Dr. __________________________  Patient Name: __________________________

We received the following Verbal Orders:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Please list any other orders or any changes in the above orders and sign below.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Physician Signature: __________________________  Date: __________________________
Address: __________________________________________________________________
Telephone Number: __________________________  UPIN#: __________________________
# Trilogy100 ventilator

## Clinician competency checklist

**Clinician name:** ____________________________  **Trainer name:** ____________________________  **Date:** ____________________________

**Goals**

<table>
<thead>
<tr>
<th>Clinician will be able to:</th>
<th>Date goals met</th>
<th>Trainer</th>
</tr>
</thead>
</table>

1. **Explain the buttons, indicators, and/or connectors on the front, rear, and side panels of Trilogy.**

   **Front panel**
   - [ ] Start/stop button
   - [ ] Key pad buttons
   - [ ] Backlight LED
   - [ ] Yellow alarm LED

   **Rear and side panels**
   - [ ] A/C power inlet
   - [ ] Exhalation porting block
   - [ ] Serial connector
   - [ ] Ethernet connector
   - [ ] O₂ connector
   - [ ] Detachable battery slot

   - [ ] Audio pause button
   - [ ] A/C power LED
   - [ ] Red alarm LED
   - [ ] Breathing circuit connection
   - [ ] SD data card slot
   - [ ] Remote alarm connector
   - [ ] External battery connector
   - [ ] Air inlet and filter
   - [ ] Cord retainer

2. **Describe all therapy modes and features.**

   - [ ] P/C
   - [ ] A/C
   - [ ] SIMV
   - [ ] S
   - [ ] T
   - [ ] P/C-SIMV
   - [ ] CV
   - [ ] CPAP
   - [ ] S/T

   - [ ] Ramp
   - [ ] AVAPS
   - [ ] Dual Prescription
   - [ ] Flex Comfort
   - [ ] Rise Time
   - [ ] Sigh

3. **Attach to A/C or D/C power and explain power source indicators.**

   - [ ] External battery
   - [ ] Detachable battery pack
   - [ ] Internal battery

4. **Attach to the O₂ source.**

---

PHILIPS

RESPIRONICS
<table>
<thead>
<tr>
<th>Goals</th>
<th>Date goals met</th>
<th>Trainer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinician will be able to:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Change the exhalation porting blocks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Passive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Active</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Assemble and connect the patient circuit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Circuit configuration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Active exhalation valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Passive exhalation port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Connect Trilogy to a remote alarm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. View and change settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Access the startup and monitor screens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Navigate menu screens (full access and startup screens)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Safely remove SD data card</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Settings and Alarms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Alarm log</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Event log</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Device information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Set circuit type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Enable the keypad lock feature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Access monitoring screens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Detailed view off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Top monitor panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Middle date/time panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bottom status panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Detailed view on</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Top monitor panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Middle measured settings panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bottom status panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Locate and explain alarm messages and alarm indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Explain high, medium and low priority alarms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Review care, cleaning, and maintenance of ventilator and access</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Clinician signature ___________________________  Trainer signature ___________________________

Respironics and Trilogy are trademarks of Respironics, Inc. and its affiliates.

© 2009 Koninklijke Philips Electronics N.V. All rights are reserved.

Philips Healthcare reserves the right to make changes in specifications and/or to discontinue any product at any time without notice or obligation and will not be liable for any consequences resulting from the use of this publication.

CAUTION: U.S. Federal law restricts these devices to sale by or on the order of a physician.

Philips Healthcare is part of Royal Philips Electronics

Europe, Africa, Middle East:
+33 1 47 52 30 00
Asia Pacific:
+65 2194 2280

Philips Respironics
1010 Murry Ridge Lane
Murrysville, PA 15668
+1 724 387 4000
+1 800 345 6443

www.philips.com respironics
Trilogy100/200

Prescription for mechanical ventilation

<table>
<thead>
<tr>
<th>Patient name</th>
<th>Date of birth</th>
<th>Date</th>
</tr>
</thead>
</table>

### Trilogy settings

- **SIMV**
- **AC**
- **CV**
- **PC-SIMV**
- **PC**
- **S/T**
- **T**
- **S**
- **CPAP**

**Vt** ______ ml  **rate** ______ inspiratory time ______  **sigh**  □ on  □ off

**Pressure** ______  **PS** ______  **EPAP/PEEP** ______  **IPAP** ______  **CPAP** ______  **AVAPS**

**IPAP min** ______  **IPAP max** ______  **Vt target** ______

**Supplemental oxygen**
- **FIO₂** /lpm ______  **titrate O₂ to maintain SaO₂ >** ______  **duration** ______

**Humidification**
- □ heated humidifier
- □ HME

**Download ventilation reports with DirectView software**
- □ yes
- □ no
- **download frequency** ______

**Patient interface**
- □ mask
- □ trach tube
- □ other ______

**Hours of use**
- □ continuous
- □ during sleep
- □ other ______

**Duration of use**
- □ lifetime
- □ other ______

### Additional orders/dual prescription

---

---

---

---

---

---

---

---

---

---

---

---

---

### Physician Information

**Name (please print)**

**Signature**

**Telephone**

This form is available at

[http://trilogy100.respironics.com/clinical](http://trilogy100.respironics.com/clinical)
# Ventilator performance record

<table>
<thead>
<tr>
<th>Patient name</th>
<th>Date of birth</th>
<th>Date</th>
</tr>
</thead>
</table>

## Ventilator

<table>
<thead>
<tr>
<th>Type</th>
<th>Serial #</th>
<th>Hours</th>
<th>PM due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Serial #</td>
<td>Hours</td>
<td>PM due</td>
</tr>
</tbody>
</table>

### Hours of use prescribed per day

<table>
<thead>
<tr>
<th>Interface</th>
<th>Trach</th>
<th>Mask</th>
<th>Mouthpiece</th>
</tr>
</thead>
</table>

### Measured parameters

<table>
<thead>
<tr>
<th>PIP</th>
<th>RR</th>
<th>I:E</th>
<th>MAP</th>
<th>Vte/Vti</th>
<th>Leak</th>
<th>Ve</th>
<th>Peak Flow</th>
</tr>
</thead>
</table>

## Vent settings

<table>
<thead>
<tr>
<th>Circuit type</th>
<th>Mode</th>
<th>Vt</th>
<th>Pressure/IPAP</th>
<th>PEEP/EPAP</th>
<th>AVAP</th>
<th>Pressure support</th>
<th>RR</th>
<th>IT</th>
<th>Flow pattern</th>
<th>Rise time</th>
<th>Trigger type</th>
<th>Flow sensitivity</th>
<th>Cycle sensitivity</th>
<th>Sigh</th>
<th>O₂, % or Lpm</th>
</tr>
</thead>
</table>

## Alarm settings

<table>
<thead>
<tr>
<th>Circuit disc</th>
<th>Low insp pressure</th>
<th>High insp pressure</th>
<th>Apnea</th>
<th>Low Vte/Vti</th>
<th>High Vte/Vti</th>
<th>Low Ve</th>
<th>High Ve</th>
<th>Low RR</th>
<th>High RR</th>
<th>Resuscitation bag checked</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
</table>

### Batteries

<table>
<thead>
<tr>
<th>Internal</th>
<th>Detachable</th>
<th>External</th>
</tr>
</thead>
</table>

## Humidifier

<table>
<thead>
<tr>
<th>Type</th>
<th>Serial #</th>
</tr>
</thead>
</table>

## Comments

Clinician signature

<table>
<thead>
<tr>
<th>Date</th>
</tr>
</thead>
</table>

Respironics is a trademark of Koninklijke Philips Electronics N.V., and its affiliates. All rights reserved. © 2011 Koninklijke Philips Electronics N.V. All rights reserved.
# Trilogy100 ventilator

## Caregiver competency checklist

<table>
<thead>
<tr>
<th>Goals</th>
<th>Date goals met</th>
<th>Trainer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The caregiver will be able to:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Understand basic indications for ventilator usage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Explain the buttons, indicators, and/or connectors on the front, rear, and side panels of Trilogy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Front panel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Start/stop button</td>
<td>□ Audio pause button</td>
<td></td>
</tr>
<tr>
<td>□ Up, down button</td>
<td>□ Left, right button</td>
<td></td>
</tr>
<tr>
<td>□ A/C power LED</td>
<td>□ Backlight LED</td>
<td></td>
</tr>
<tr>
<td>□ Red alarm LED</td>
<td>□ Yellow alarm LED</td>
<td></td>
</tr>
<tr>
<td><strong>Rear and side panel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ A/C power inlet</td>
<td>□ Breathing circuit connection</td>
<td></td>
</tr>
<tr>
<td>□ Exhalation port</td>
<td>□ SD data card slot</td>
<td></td>
</tr>
<tr>
<td>□ Serial connector</td>
<td>□ Remote alarm</td>
<td></td>
</tr>
<tr>
<td>□ Ethernet connector</td>
<td>□ External battery connector</td>
<td></td>
</tr>
<tr>
<td>□ O₂ connector</td>
<td>□ Air inlet and filter</td>
<td></td>
</tr>
<tr>
<td>□ Detachable battery slot</td>
<td>□ Cord retainer</td>
<td></td>
</tr>
<tr>
<td>3. Connect to A/C power.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Attach O₂ source and discuss O₂ safety.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Assemble and connect:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Patient circuit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Exhalation device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Tubing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Patient connector (swirl or flex)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Humidifier (if ordered)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Turn ventilator on and off</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**PHILIPS RESPIRONICS**

70
<table>
<thead>
<tr>
<th>Goals</th>
<th>Date goals met</th>
<th>Trainer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The caregiver will be able to:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Describe selected viewing options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Detailed view off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Top monitor panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Middle date/time panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Bottom status panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Detailed view</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Top monitor panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Middle measured settings panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Bottom status panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Navigate the Menu screens.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Switch to secondary settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Safely remove the SD card</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ My Settings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Alarm log</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Locate and explain alarm messages and alarm indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(audio and visual).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Explain the Audio Pause feature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Understands what to do when an alarm occurs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Connect to D/C power and explain power source indicators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ External battery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Detachable battery pack</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Internal battery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Review care, cleaning, and maintenance of ventilator and accessories.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Review emergency procedures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Caregiver signature ____________________________  Clinician signature ____________________________

Respironics and Trilogy are trademarks of Respironics, Inc. and its affiliates.

© 2009 Koninklijke Philips Electronics N.V. All rights are reserved.
Philips Healthcare reserves the right to make changes in specifications and/or to discontinue any product at any time without notice or obligation and will not be liable for any consequences resulting from the use of this publication.

CAUTION: U.S. Federal law restricts these devices to sale by or on the order of a physician.

Philips Healthcare is part of Royal Philips Electronics
Europe, Africa, Middle East: +33 1 47 52 30 00
Asia Pacific: +852 3194 2280
www.philips.com/respirronics

Philips Respironics
1010 Murry Ridge Lane
Murrysville, PA 15668
+1 724 387 4000
+1 800 345 6443
Trilogy100 checkout procedure

Overview
This information provides the necessary performance, service, and safety (optional) testing procedures. The intervals for the specific tests are listed in the testing procedures found in the product manual.

Trilogy checkout procedure
This test procedure should be performed prior to connecting the device to a patient or in between patient usage. Test both the active and passive circuits if you want to do a complete checkout on the device. The tests should be performed as described in order to verify proper operation of the device.

The actual circuit configuration to be used on the patient should be used to perform the system checkout.
1 Before starting

Visual inspection
Before starting the setup and testing procedures contained within this guide, a visual inspection must be performed. Do not proceed until the following are verified:

1. Verify that the enclosure is not broken and that all applicable screws are in place.
2. Verify that the device handle, SD card door, and detachable battery are secure and in good working order.
3. Verify that the rubber feet are on the bottom of the device.

Tools required
Active exhalation porting block with PAP (PN 1054670)
Passive exhalation porting block (PN 1040372)
Active exhalation device with PAP (PN 1053716)
Whisper Swivel II (PN 332113)
Test lung (PN 1021671)
Small flat head screwdriver

2 Initial setup

1. Connect the power cord to the device and then to an AC outlet.
2. Attach the test lung to the patient connection end of the desired circuit (active PAP or passive).
3. Access the Setup screen. Reference the System Setup section for more information.

Warning
If you notice any unexplained changes in the performance of the device, if it is making unusual sounds, if the device or detachable battery are dropped, if water is spilled into the enclosure or if the enclosure is cracked or broken, discontinue use and contact Philips Respironics or an authorized service center for service.

3 Pre checkout setup

Before performing any setting and alarm tests, the following settings must be modified.

1. Settings and alarms menu
Modify the settings in the Setting and Alarms menu to match the values shown in the table below. If necessary refer to the System Setup section of the Service Manual for instructions on modifying ventilator settings.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Prescription</td>
<td>off</td>
</tr>
<tr>
<td>Circuit Type</td>
<td>active PAP or passive</td>
</tr>
<tr>
<td>Therapy Mode</td>
<td>S/T</td>
</tr>
<tr>
<td>AVAPS</td>
<td>off</td>
</tr>
<tr>
<td>IPAP</td>
<td>20 cm H₂O</td>
</tr>
<tr>
<td>EPAP</td>
<td>4 cm H₂O</td>
</tr>
<tr>
<td>Breath Rate</td>
<td>12 BPM</td>
</tr>
<tr>
<td>Inspiratory Time</td>
<td>1.6 seconds</td>
</tr>
<tr>
<td>Trigger Type (passive circuit)</td>
<td>Auto-Trak</td>
</tr>
<tr>
<td>Flow Trigger Sensitivity (active PAP circuit)</td>
<td>6.0 liters per minute</td>
</tr>
<tr>
<td>Flow Cycle Sensitivity (active PAP circuit)</td>
<td>20 percent</td>
</tr>
<tr>
<td>Rise Time</td>
<td>1</td>
</tr>
<tr>
<td>Ramp Length</td>
<td>off</td>
</tr>
<tr>
<td>All other alarms</td>
<td>off</td>
</tr>
</tbody>
</table>

2. Options menu
Modify the settings in the Options menu to match the values shown in the table below.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu Access</td>
<td>full</td>
</tr>
<tr>
<td>Detailed View</td>
<td>on</td>
</tr>
<tr>
<td>All other settings</td>
<td>discretionary</td>
</tr>
</tbody>
</table>

3. Turn device power on
Press the Start/Stop button on the front of the ventilator. The system will begin operating using the defined ventilation settings.
4 Setting and alarm tests

Complete the following steps to perform the setting and alarm tests.

Test 1: Verify the High Tidal Volume alarm
This procedure verifies that the High Tidal Volume alarm is working properly. For passive circuits, this will verify the High Vte alarm. For active with PAP circuits, this will verify the High Vti alarm. It assumes that you have attached the test lung, verified the ventilator settings, and turned on ventilator power.

1. Change alarm ventilator setting
Modify the High Tidal Volume alarm setting (High Vte/High Vti) value to 50 ml.

2. Verify the alarm
Wait up to 40 seconds and verify the following alarm signals:
- The High Priority audible indicator sounds
- A red light flashes on the Alarm Indicator/Audio Pause button
- The High Tidal Volume alarm condition appears on the screen, highlighted in red

3. Modify ventilator alarm setting
Modify the High Tidal Volume alarm setting (High Vte/Vti) value to 500 ml.

4. Verify reset
Wait up to 40 seconds and verify the following auto-reset conditions:
- The High Priority audible indicator has stopped sounding
- The red light on the Alarm Indicator/Audio Pause button has stopped flashing

5. Restore ventilator setting
Modify the High Tidal Volume alarm setting (High Vte/Vti) value to off.

Note
Do not use the “Reset” button to manually reset the alarm. Instead, use the “Modify” button to change ventilator settings. This applies to all tests.

Test 2: Verify the Low Tidal Volume alarm
This procedure verifies that the Low Tidal Volume alarm is working properly. For passive circuits, this will verify the Low Vte alarm. For active with PAP circuits, this will verify the Low Vti alarm. It assumes that you have attached the test lung, verified the ventilator settings, and turned on ventilator power.

1. Change alarm ventilator setting
Modify the Low Tidal Volume alarm setting (Low Vte/Vti) value to 500 ml.

2. Verify the alarm
Wait up to 40 seconds and verify the following alarm signals:
- The High Priority audible indicator sounds
- A red light flashes on the Alarm Indicator/Audio Pause button
- The Low Tidal Volume alarm condition appears on the screen, highlighted in red

3. Modify ventilator alarm setting
Modify the Low Tidal Volume alarm setting (Low Vte/Vti) value to 50 ml.

4. Verify reset
Wait up to 40 seconds and verify the following auto-reset conditions:
- The High Priority audible indicator has stopped sounding
- The red light on the Alarm Indicator/Audio Pause button has stopped flashing

5. Restore ventilator setting
Modify the Low Tidal Volume alarm setting (Low Vte/Vti) value to off.
Test 3: Verify the Circuit Disconnect alarm
This procedure verifies that the Circuit Disconnect alarm is working properly. It assumes that you have attached the test lung, verified ventilator settings, and turned on ventilator power.

1. **Change Circuit Disconnect ventilator setting**
   Modify the Circuit Disconnect ventilator setting at 10 seconds.

2. **Disconnect test lung**
   Disconnect the test lung from the circuit.

   The Low Inspiratory Pressure alarm may also be detected.

3. **Verify the alarm**
   Wait approximately 10 seconds and verify the following alarm signals:
   - The High Priority audible indicator sounds
   - A red light flashes on the Alarm Indicator/Audio Pause button
   - The Circuit Disconnect alarm condition appears on the screen, highlighted in red

4. **Reconnect test lung**
   Reconnect the test lung to the circuit.

5. **Verify reset**
   Wait up to 40 seconds and verify the following auto-reset conditions:
   - The High Priority audible indicator has stopped sounding
   - The red light on the Alarm Indicator/Audio Pause button has stopped flashing

6. **Restore ventilator setting**
   Modify the ventilator setting (Circuit Disconnect) value to off.

   **Note**
   Do not use the “Reset” button to manually reset the alarm. Instead, use the “Modify” button to change ventilator settings. This applies to all tests.

Test 4: Verify the High Inspiratory Pressure alarm
This procedure verifies that the High Inspiratory Pressure alarm is working properly. It assumes that you have attached the test lung, verified ventilator settings, and turned on ventilator power.

1. **Change ventilator settings**
   Modify the ventilator settings to match the values shown in the table below.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>CV</td>
</tr>
<tr>
<td>Tidal Volume</td>
<td>500 ml</td>
</tr>
<tr>
<td>Breath Rate</td>
<td>12 BPM</td>
</tr>
<tr>
<td>Inspiratory Time</td>
<td>1.0 seconds</td>
</tr>
<tr>
<td>Flow Pattern</td>
<td>ramp</td>
</tr>
<tr>
<td>PEEP</td>
<td>4 cm H₂O</td>
</tr>
<tr>
<td>Sigh</td>
<td>off</td>
</tr>
<tr>
<td>Circuit Disconnect</td>
<td>off</td>
</tr>
<tr>
<td>Low Inspiratory Pressure</td>
<td>6 cm H₂O</td>
</tr>
<tr>
<td>High Inspiratory Pressure</td>
<td>10 cm H₂O</td>
</tr>
<tr>
<td>Apnea</td>
<td>off</td>
</tr>
<tr>
<td>All other alarms</td>
<td>off</td>
</tr>
</tbody>
</table>

2. **Verify the alarm**
   Wait up to 40 seconds and verify the following alarm signals:
   - The High Priority audible indicator sounds
   - A yellow light flashes on the Alarm Indicator/Audio Pause button
   - The High Inspiratory Pressure alarm condition appears on the screen, highlighted in yellow

   If this alarm is not reset within 10 occurrences, the alarm is elevated to High Priority, and the High Priority indicators occur.

3. **Modify ventilator alarm setting**
   Modify the High Inspiratory Pressure setting value to 60 cm H₂O.

4. **Verify reset**
   Wait 40 seconds and verify the following auto-reset conditions:
   - The High Priority audible indicator has stopped sounding
   - The yellow light on the Alarm Indicator/Audio Pause button has stopped flashing
Test 5: Verify the Low Inspiratory Pressure alarm

This procedure verifies that the Low Inspiratory Pressure alarm is working properly. It assumes that you have attached the test lung, verified ventilator settings, and turned on ventilator power.

1. Change ventilator settings
Modify the ventilator settings to match the values shown in the table below.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>CV</td>
</tr>
<tr>
<td>Tidal Volume</td>
<td>500 ml</td>
</tr>
<tr>
<td>Breath Rate</td>
<td>12 BPM</td>
</tr>
<tr>
<td>Inspiratory Time</td>
<td>1.0 seconds</td>
</tr>
<tr>
<td>Flow Pattern</td>
<td>ramp</td>
</tr>
<tr>
<td>PEEP</td>
<td>4 cm H₂O</td>
</tr>
<tr>
<td>Sigh</td>
<td>off</td>
</tr>
<tr>
<td>Circuit Disconnect</td>
<td>off</td>
</tr>
<tr>
<td>Low Inspiratory Pressure</td>
<td>40 cm H₂O</td>
</tr>
<tr>
<td>High Inspiratory Pressure</td>
<td>60 cm H₂O</td>
</tr>
<tr>
<td>Apnea</td>
<td>off</td>
</tr>
<tr>
<td>All other alarms</td>
<td>off</td>
</tr>
</tbody>
</table>

2. Verify the alarm
Wait up to 40 seconds and verify the following alarm signals:
• The High Priority audible indicator sounds
• A red light flashes on the Alarm Indicator/Audible Pause button
• The Low Inspiratory Pressure alarm condition appears on the screen, highlighted in red

3. Modify ventilator alarm setting
Modify the Low Inspiratory Pressure setting value to 6 cm H₂O.

4. Verify reset
Wait 40 seconds and verify the following auto-reset conditions:
• The High Priority Indicator has stopped sounding
• The red light on the Audio Pause/Alarm Indicator button has stopped flashing

5. Battery function verification
Make sure the batteries are functioning properly and fully charged before usage.

Verify the detachable and internal (lithium ion) batteries function
1. Connect AC power to the device and verify that the green AC LED on the front panel is lit.
2. Verify that the detachable battery is properly installed.
3. Turn the device on and verify that both the detachable and internal battery symbols appear on the display. Verify if either battery is less than fully charged (the charge symbol will display on the respective battery).
4. Disconnect the AC power source from the device.
   • Verify that the AC Power Disconnected alarm message appears on the display and the green AC LED is not lit. Press Reset.
   • Verify that the detachable battery symbol shows the level of charge noted in the previous step and that the device continues to operate.
   • Verify that the detachable battery symbol has a black box around it to indicate that it is in use.
5. Disconnect the detachable battery pack from the device.
   • Verify that the Detach Batt Disconnected alarm message appears on the display. Press Reset.
   • Verify that the internal battery symbol shows the same level of charge as noted above and the device continues to operate.
   • Verify that the internal battery symbol has a black box around it to indicate that it is in use.
6. Reconnect the detachable battery and AC power source.

Verify the external battery function (optional)
1. Connect AC Power to the device and verify that the green AC LED is lit.
2. Connect the external battery cable to the external battery and to the ventilator.
3. Verify that the external battery symbol is shown on the display and some level of charge is present.
4. Disconnect the AC Power source from the device.
   • Verify that the AC Power Disconnected alarm message appears on the display and the green AC LED is not lit. Press Reset.
   • Verify that the external battery symbol shows the level of charge as noted in the previous step and the device continues to operate.
   • Verify that the external battery symbol has a black box around it to indicate that it is in use.
5. Reconnect the AC power source.
6 Alarm and event log clean-up

1. In the Setup menu, select Alarm Log.
2. Press Clear to clear the log file.
3. Press Yes to confirm.
4. Press Finish to complete.
5. In the Setup menu, select Event Log.
6. Press Clear to clear the Log file.
7. Press Yes to confirm.
8. Press Finish to complete.

Results
All portions of this checkout procedure should be completed prior to connection to the patient. If any of the tests fail to complete as indicated, if possible, correct the error, clear the alarm and resume testing.

If you have additional questions about Trilogy testing, please refer to the product manual or contact customer service at 800-345-6443 or +1-724-387-4000.
## Checkout procedure data sheet

### Visual inspection

<table>
<thead>
<tr>
<th>Damaged parts</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

### Setting and alarm tests

| Test 1: High Tidal Volume alarm setting | Pass | Fail |
| Test 2: Low Tidal Volume alarm setting | Pass | Fail |
| Test 3: Circuit Disconnect alarm setting | Pass | Fail |
| Test 4: High Inspiratory Pressure alarm setting | Pass | Fail |
| Test 5: Low Inspiratory Pressure alarm setting | Pass | Fail |

### Battery function verification

| Detachable and internal batteries function | Pass | Fail |
| External battery function                | Pass | Fail |

---

**Signature**

---

**Date**

---

**Serial number**
Philips Respironics
1010 Murry Ridge Lane
Murrysville, PA 15668
Customer Service
+1 724 387 4000
800 345 6443 (toll free, US only)
Philips Respironics International Headquarters
+33 1 47 28 30 82
Philips Respironics Asia Pacific
+65 6882 5282
Philips Respironics Australia
+61 (2) 9666 4444
1300 766 488 (Toll free Australia only)
Philips Respironics China
+86 400 828 6665
+86 800 828 6665
Philips Respironics Deutschland
+49 8152 93 06 0
Philips Respironics France
+33 2 51 89 36 00
Philips Respironics Italy
+39 039 203 1
Philips Respironics Sweden
+46 8 120 45 900
Philips Respironics Switzerland
+41 6 27 45 17 50
Philips Respironics United Kingdom
+44 800 1300 845
www.philips.com/respironics

Respironics, Trilogy, and Whisper Swivel are trademarks of Respironics, Inc. and its affiliates.

Please visit www.philips.com/trilogy100

© 2012 Koninklijke Philips Electronics N.V.
All rights are reserved.

Philips Healthcare reserves the right to make changes in specifications and/or to discontinue any product at any time without notice or obligation and will not be liable for any consequences resulting from the use of this publication.

CAUTION: US federal law restricts these devices to sale by or on the order of a physician.
JH 04/20/12
HOME TRACHEOSTOMY CARE
INTRODUCTION

This booklet is designed to give you specific information on how to care for your tracheostomy at home. It may also give you some helpful hints on resuming normal daily activities. Feel free to ask questions or let your doctor or nurse know if you do not understand any part of your instructions. It is very important that you and your family feel confident in your ability to care for your tracheostomy once you are home. After discharge, any questions regarding your trach (pronounced “trach”) or trach care can be answered by your physician or nurse. Please call your physician’s office if you have any questions.

What is a Trach?

A tracheostomy, or “trach,” is an incision made in your neck that provides an air passage from your lungs and trachea (windpipe) to the air outside. A trach tube keeps this air passage open and provides a passageway for removal of secretions.

The trach tube is located in the front of your neck and passes through your skin and the outer ring of the trachea, or windpipe. The trach tube curves downward 1 to 1 1/2 inches inside your windpipe toward your lungs. Your tube’s size, length and curvature have been selected to provide the most comfortable fit possible.
**Parts of the Trach Tube**

Your trach tube consists of an outer cannula, an inner cannula and an obturator. The outer cannula holds the incision in your neck open. It is held in place first by sutures (stitches) and then by trach ties or a trach secure (a ribbon with Velcro fasteners) before you go home. The inner cannula is held in place with a locking mechanism, and fits snugly into the outer cannula. The third part of your trach tube is the obturator, which is used to insert a new trach tube or to reinsert your trach.

*NOTE: Carry your obturator with you at all times.*
Types of Tracheostomy Tubes

There are many different types of trach tubes. Some patients begin with a plastic trach tube that has an inflatable cuff, and are discharged with metal or plastic trach tubes that do not have a cuff. Some trach tubes have air holes in the upper portion of the curve that allow air to pass through the vocal cords. This allows the patient to talk. It is often necessary to plug the open end of this type of trach with a special type of button or a finger when talking.

Your physician will select the trach type that best meets your needs and will discuss this with you and your family.
Caring For Your Tracheostomy

Humidity

The air you breathe is normally warmed, humidified and filtered by your nose and mouth. Air is not humidified when it passes through a trach tube. Therefore, additional moisture must be added to the air you breathe. This is especially important during winter months when the air is dry.

Humidity or moisture helps keep your secretions thin and easier to cough up. You can decide if your home has enough humidity by the appearance of your secretions. Air that is too dry can cause secretions to become thick and hard to cough out. Plugs of dry secretions, called mucus plugs, can form and cause irritation. Mucus plugs may cause secretions to contain some blood.

Your doctor may recommend a trach collar for additional humidity. The trach collar is attached by tubing to a nebulizer, a machine that makes the humidity. Some trach patients wear an “artificial nose” over the trach tube for additional humidity. Your physician will determine if you need one, and will teach you how to use it.

How to increase the humidity around your tracheostomy

1. Run a cool mist vaporizer next to your bed at night.
2. Run a large capacity (9-10 gallon) humidifier in the living area during the day.
3. Drink 8-10 glasses of water every day.
4. If your doctor recommends it, you can put a small amount of normal saline into the trach. This will loosen secretions and cause coughing. (This is described in the Suctioning section, on next page.)
Suctioning

Suctioning the tracheostomy is necessary to remove secretions from your breathing passages. Suctioning may be needed when you cannot cough up secretions or when you are sick.

How to Suction Properly

1. Gather all the equipment you will need:
   - Suction machine
   - Suction catheter
   - Normal saline in a clean cup
2. Wash hands thoroughly using soap and water.
3. Open the suction catheter and attach it to the suction machine. Turn on the suction machine.
4. Wet the suction catheter by dipping the end into the cup of normal saline. A wet catheter tip is much easier to put into the trach tube.
5. Gently insert the suction catheter into the trach without applying suction. Insert the suction catheter 6-8 inches or until you meet resistance.
6. Apply intermittent suction (by covering and uncovering the suction vent with your thumb) as you pull the catheter out, and roll the catheter gently between your thumb and first finger as you withdraw it. The catheter should not remain in the trach for more than 10 seconds.
7. Give yourself time to catch your breath between suctioning periods.
8. Clear the suction catheter of secretions by suctioning until the catheter is clean.
9. If your secretions are thick, you may need to put several drops of normal saline into the trach tube. If this makes you cough, you will need to suction again.
Cleaning the Inner Cannula

Most trach tubes have an inner cannula, which must be removed and cleaned regularly. Some trach tubes have a disposable inner cannula, which must be removed, discarded and replaced. Your doctor or nurse will discuss with you the type of trach tube and inner cannula you have and the cleaning schedule should follow.

How to Clean the Inner Cannula

1. Pour hydrogen peroxide and water into a clean cup or bowl (Half peroxide. Half water).
2. Remove the inner cannula while holding the neck plate of the trach.
3. Place the inner cannula in the hydrogen peroxide and water mixture.
4. Using a non-abractive brush or pipe cleaners, gently remove mucus and crusts from the inner cannula.
5. Thoroughly rinse the inner cannula with water.
6. Gently shake the inner cannula to dry it.
7. Re-insert it while holding the neck plate of the trach.
8. Turn the inner cannula clockwise to the “lock” position.
9. If you have a disposable inner cannula, throw it away and replace it as needed.
Caring for Your Skin

Your skin around the tracheostomy site will need to be cleaned at least twice daily.

How to Cleanse the Skin

1. Gather all your supplies:
   - Soap and water
   - Tracheostomy dressing (if used)
   - Clean washcloths
   - Cotton-tipped swabs
   - Trach ties

2. Wash your hands thoroughly with soap and water.

3. Remove the old dressing and look at your skin. Report any redness or bleeding to your doctor or nurse.

4. Wash your hands again.

5. Clean the skin around your trach with soap and water. A cotton-tipped swab may help remove crust.

6. Make sure the soap is rinsed off.

7. Gently pat your skin dry with a dry cloth.

8. Slip the tracheostomy dressing under the neck plate, if needed.
Changing the Tracheostomy Tube

Many patients change their tracheostomy tube at home after they receive instructions from their physicians or nurses. You will receive specific guidelines on how frequently to change the trach tube.

How to Change the Trach Tube

1. Gather the following supplies
   - Tracheostomy tube
   - Tracheostomy ties or trach secure
   - Clean scissors (for trach ties only)
   - Trach Dressing (if used)

2. Wash your hands thoroughly. To keep the tube clean, touch ONLY the tubes edge pieces.

3. Place the obturator into the clean trach tube (if you are using; tube with an inner cannula, remove it before inserting the obturator). The smooth rounded tip of the obturator helps to guide the new tube into place.

4. Tie the clean tracheostomy ties to the clean trach tube or fasten the trach secure on one side.

5. Suction the old tube before you remove it, if needed.

6. Cut the old ties or unfasten the secure and remove the tube.

7. Insert the new trach tube (with the obturator in place) with an inward and downward arc. Insert the tube while breathing in.

8. Remove the obturator as soon as the new tube is in place (be sure to hold the collar edge pieces of the new tube because it is not secured).

9. Tie the tracheostomy ties following the example shown or secure the Velcro closures on the trach securely.

10. Insert the inner cannula into the trach tube (if applicable).

11. Place a clean tracheostomy dressing under the neck plate of the trach tube (if used).

12. Clean the soiled trach tube with a mixture of half hot water and half peroxide mixture. Allow the tube to dry before placing it in a clean plastic bag. It is now clean and ready for the next tube change.


Emergency Situations

Going home with a tracheostomy raises many questions, fears and concerns. Some of these may be:

- Will I be able to recognize that something is seriously wrong with the trach tube?
- What should I do if the trach tube accidentally comes out?
- What should I do if the trach tube becomes plugged?
- What should someone do if I become short of breath or have difficulty breathing?

Although there is the potential for any of these situations to arise, they do not usually occur and can usually be prevented by properly caring for your tracheostomy. Remember in an emergency, **DO NOT PANIC**. Think through what is happening and how you can handle it.

**Will I be able to recognize that something is seriously wrong with the trach tube?**

Yes - The two key problems with trach tubes are:

- The trach tube may accidentally come out of the stoma and the airway closes down.
- The trach tube may become plugged with mucus or obstructed by something covering the trach tube on the outside.

Read on to learn how to deal with these situations if they occur.

**What should I do if the trach tube accidentally comes out?**

- Immediately replace it with a clean trach tube.
- If you do not have an extra trach tube, rinse the old tube in water and replace it.
- Change to a clean trach tube as soon as possible.
- If you are unable to reinsert a trach tube, call 911. If you are able, keep trying to reinsert the trach tube. Enlist the help of someone else if there is someone nearby.
- If the patient begins to get into distress, cover the stoma with Xeroform Gauze and ventilate the patient with mask and bag.

The trach tube usually comes out because the trach ties were either tied too loosely or they broke. Forceful, prolonged coughing can cause a trach tube to be coughed out. Be sure the ties are tied snugly and that new ones are used when you notice signs of fraying.

**What should I do if the trach tube becomes plugged?**

A plugged trach tube is caused by mucus secretions inside the tube or something covering the outside of the trach opening.
• You may have trouble breathing, you may be making crowing sounds, and you may develop a bluish color around the face.
• If you are alone, remove your inner cannula. If this fails to remove the obstruction, call 911.
• If someone is with you, have him or her do the following:

Attempt to suction the trach. If this is not successful, remove the inner cannula and suction vigorously once or twice.
If suctioning does not relieve the obstruction, insert a clean tube and evaluate the patient’s ability to breathe.

If the patient is unable to breathe, initiate artificial respiration and get help. (See steps below).
If a tube is blocked, it is usually from thick, dried mucus in the tube. Increasing moisture (humidity) to the tracheostomy will help loosen and prevent this from happening.

What should I do if the patient stops breathing?

Initiate emergency breathing through the trach or stoma.

Follow these steps:
1. First, try to wake the patient, who may just be sleeping.
2. Shake him gently and call his name to see if the patient will wake up.
If the patient does not wake:
Call for help. Yell loudly for someone to call 911, if no one is nearby, try to call yourself.

Lay the patient on his or her back on a hard surface, such as the floor.
• Open the airway. Do this by putting one hand under the chin and the other hand on the forehead. Lift the chin up and push the forehead down so that the chin is out of the way of the tracheostomy.

• Check to see if the patient is breathing. Put your ear close to the trach tube and watch the person’s chest. Listen for air coming out of the trach tube, feel for any air coming out of the trach tube onto your ear or cheek, and watch to see if the person’s chest is moving. If you think the person is not breathing:

• After covering the patient’s mouth and nose, give two quick breaths through the trach tube. Do this by using a breathing bag (the ambu bag that the patient has been given) or by putting your mouth around the trach tube opening and breathing into the trach tube. If you cannot get the breaths to go in, remove the inner cannula and try again. If you are still unsuccessful, change the trach tube. It may be plugged.

• Check to see if the person’s heart is beating. If you do not detect a heart heat, initiate CPR. If the patient only needs breaths, give one breath every 5 seconds until help arrives. Continue artificial respiration until the patient resumes breathing or until paramedics arrive and take over.
Patient and Family Education Checklist

Date and initial as completed – save as permanent chart document

<table>
<thead>
<tr>
<th></th>
<th>Instruction Completed</th>
<th>Verbalized Understanding</th>
<th>Return Demonstration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trach Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning Inner Cannula</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trach Ties</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suctioning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trach Changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stoma Care</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>