

Royal Brompton & Harefield



NHS Foundation Trust

Great Ormond Street  
Hospital for Children



NHS Foundation Trust

# A Joint Competency Document for Carers Working with Long Term Tracheostomy Ventilated Children

## NIPPY Junior<sup>+</sup>™ Ventilator

1. Description of competencies and supporting information
2. Sign off records

NHS No:

Relative/carers name:

## Introduction

**These competencies have been developed by the Royal Brompton and Harefield Hospital and Great Ormond Street Hospital. They have been devised to enable the assessment of the caregiver's competence to care for a child requiring long term ventilation (LTV). The ethos of this approach is to enable the care giver to deliver safe and high quality care.**

**The competency booklet describes the knowledge and skills required by carers to manage the care of a child with a tracheostomy and requiring long term ventilation. The Competency Booklet does not replace practice based learning.**

This booklet is set out in two parts. The first part is a resource pack which covers in detail the information about the procedures and tasks relating to the care of a child with a tracheostomy and requiring long term ventilation.

The second part of the booklet outlines the core competencies. All the relevant sections will need to be signed by a qualified professional (assessor). The assessor must be satisfied and confident that the caregiver can undertake each relevant section of the competency booklet to a competency rating of 'Competent' (see below table) at the minimum. The caregiver must demonstrate that they can undertake each relevant section can be consistently replicated these over a period of time and in a variety of contexts. The caregiver will need to sign to say they feel confident and competent to undertake each relevant section.

The competency rating scale, adapted from Benner's Stages of Clinical Competence, These enable the assessor to grade the caregivers level of competence. The care giver must demonstrate a minimum level of Stage 3 'Competent' in order to be deemed competent to care for the patient without supervision.

### Stages of clinical competence

#### Stage 1: Novice

The Novice or Beginner has no experience in the situations in which they are expected to perform. The Novice lacks confidence to demonstrate safe practice and requires continual verbal and physical cues. Practice is within a prolonged time period and he/she is unable to use discretionary judgement.

#### Stage 2: Advanced Beginner

Advanced Beginners demonstrate marginally acceptable performance because the care giver has had prior experience in actual situations. He/she is efficient and skilful in parts of the practice area, requiring occasional supportive cues. May/may not be within a delayed time period. Knowledge is developing.

#### Stage 3: Competent

The Competent Care Giver is able to demonstrate efficiency, is coordinated and has confidence in his/her actions. The conscious, deliberate planning that is characteristic of this skill level helps achieve efficiency and organisation. Care is completed within a suitable time frame without supporting cues. The competent care giver lacks the speed and flexibility of someone who has staged 4, but competence is characterised by having the ability to cope with and manage deviation to care.

**This is the minimum level required to be able to practice without supervision.**

#### Stage 4: Proficient

The Proficient Care Giver perceives situations as wholes rather than in terms of parts or aspects. The Proficient care giver understands a situation as a whole because they perceive its meaning in terms of long-term goals. The Proficient care giver learns from experience what typical events to expect in a given situation and how plans need to be modified in response to these events. The Proficient care giver can now recognise when the expected normal picture does not materialise. This holistic understanding improves the Proficient care giver decision making; it becomes less laboured because the care giver now has a perspective on which of the many existing attributes and aspects in the present situation are the important ones.

#### Stage 5: The Expert

The Expert Care Giver has an intuitive grasp of each situation and zeroes in on the accurate region of the problem without wasteful consideration of a large range of unfruitful, alternative diagnoses and solutions. The Expert care giver operates from a deep understanding of the total situation. His/her performance becomes fluid and flexible and highly proficient. Highly skilled analytic ability is necessary for those situations with which the Expert care giver has had no previous experience.

\*Adapted from Benner, P. (1984). From novice to expert: Excellence and power in clinical nursing practice. Menlo Park: Addison-Wesley, pp. 13-34.

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## Contact List

Child's Name \_\_\_\_\_ Parent's/Carer Name \_\_\_\_\_

Treating/ Discharge Hospital \_\_\_\_\_

Hospital Named Nurse Name Email Telephone	Out of Hours Contact Name Name Email Telephone
Tracheostomy Liaison Name Email Telephone	Community Nurse Contact Name Email Telephone
Ventilator Company Contact Name Email Telephone	Continuing Care Nurse Name Email Telephone
Hospital Occupational Therapist Name Email Telephone	Social Worker Community/Hospital Name Email Telephone
Community Occupational Therapist Name Email Telephone	Community Paediatrician Name Email Telephone
Community Physiotherapist Name Email Telephone	School Nurse Name Email Telephone
Dietician Name Email Telephone	Careprovider Lead Name Email Telephone
Local Hospital Telephone	Tertiary/Specialist Centre/Consultant Lead Telephone



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## Health and Safety Awareness and Bedside Checks

Performance criteria/ knowledge required	Comments/Guidance
<p><b>1. Identify potential hazards and dangers on the ward:</b></p> <ul style="list-style-type: none"> <li>■ Need for safe &amp; tidy bedspace</li> </ul> <p><b>2. Assess the child's immediate environment for health and safety:</b></p> <ul style="list-style-type: none"> <li>■ Check all equipment is in place and stored appropriately (eg. care with electrical leads/ plugs/ trip hazards)</li> <li>■ Awareness of the child's motor abilities and make appropriate measures to avoid hazard (eg. seatbelts in chairs, ensure cot sides used appropriately, monitor if patient is able to remove tracheostomy)</li> </ul> <p><b>3. Demonstrate the safety checks at the beginning of each shift (see comments)</b></p>	<ul style="list-style-type: none"> <li>■ Assess the child using a systematic approach, gather baseline information on child's well-being if trained to do so. <ul style="list-style-type: none"> <li>• Check the tracheostomy tube is patent, suctioning if necessary and ensure the tracheostomy is appropriate secured e.g. check tracheostomy tape tension</li> <li>• Assess chest movement and respiratory effort</li> <li>• Assess if the child is comfortable and coordinating with their ventilator if in use</li> </ul> </li> <li>■ Demonstrate how to take the child's vital signs if taught to do so <ul style="list-style-type: none"> <li>• Heart rate (HR)</li> <li>• Breathing rate and effort</li> <li>• Oxygen saturations (SpO<sub>2</sub>)</li> <li>• Temperature</li> </ul> </li> <li>■ Demonstrate how to correctly place a saturation probe</li> <li>■ Demonstrate how to measure and record the oxygen saturations of child</li> <li>■ Demonstrate how to set the parameters and alarms on an oxygen saturation monitor <ul style="list-style-type: none"> <li>• Able to explain why parameters are important i.e. implications of too low or too high saturations.</li> <li>• Discuss what appropriate alarm settings may normally be for a child</li> <li>• Demonstrate awareness as to why individuals may have specific parameters for O<sub>2</sub> saturations</li> <li>• Training is required when a different saturation monitor is used</li> </ul> </li> <li>■ Discuss the steps to be taken if the oxygen saturation of the child is low/poor trace. <ul style="list-style-type: none"> <li>• Clinical observations of the child e.g. airway cyanosis, respiratory distress.</li> <li>• Check patient is ventilating appropriately and machine attached properly, increase O<sub>2</sub> if cyanosed etc.</li> <li>• Evaluate trace i.e. for interference due to movement vs. true desaturation</li> <li>• Re-site probe and reassess trace</li> </ul> </li> <li>■ Check Bedside Equipment.</li> </ul>

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# Hand Washing and Hygiene

## Performance criteria/ knowledge required

## Comments/Guidance

**1. Demonstrate effective handwashing**

**2. Discuss how infection can spread.**

- Bacteria or viruses can be passed by direct or indirect contact (eg. touching hands, sneezing or coughing).
- Body fluids such as blood and saliva can contain the infecting organisms and transmission of these fluids can cause the spreading of the infection
- Appropriate use of protective clothing
- Safe disposal of clinical waste and protective clothing

**How to Hand Wash - Step by Step Images**



# Personal Hygiene Needs of the Child

## Performance criteria/ knowledge required

## Comments/Guidance

**1. Demonstrate how to assess the oral hygiene:**

- Look for changes in the child's mouth and lips eg. dryness, cleanliness
- Report and document any changes

**2. Safe bathing with a tracheostomy:**

- Change tapes/tubes after the bath, this could be the daily routine
- Whenever possible two people should be present
- Ensure tracheostomy and ventilator are clear of the water



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## Action Plan for Clinical Deterioration

Performance criteria/ knowledge required	Comments/Guidance
<ol style="list-style-type: none"> <li>1. <b>Discuss normal parameters eg. Heart Rate, Breathing Rate and Effort, Oxygen Saturation and Temperature</b></li> <li>2. <b>Demonstrate how to recognise signs of distress or changes in clinical status, see comments</b></li> <li>3. <b>Know how to access emergency contact numbers and where they are displayed in the child's environment</b> <ul style="list-style-type: none"> <li>■ Your lead community key worker will inform you of the appropriate path to follow in case of emergency.</li> <li>■ Refer to the child's treatment plan in case of deterioration</li> <li>■ Community lead nurse</li> <li>■ GP</li> <li>■ Local hospital</li> <li>■ 999</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>1. <b>It is important to assess the child as well as using any monitoring available. Knowing what is normal for the child will be vital in identifying if there is any change in their condition</b>            Assessment should be structured and must include:           <ul style="list-style-type: none"> <li>■ Checking that the tracheostomy is in place and patent.</li> <li>■ Observation of breathing pattern (to include chest movement, respiratory rate and effort)</li> <li>■ Observation of circulation (to include colour, temperature of the child)</li> <li>■ Observation of the child's responsiveness/ neurology compared to their normal</li> </ul> </li> <li>2. <b>Changes in condition may include:</b> <ul style="list-style-type: none"> <li>■ Altered chest movement</li> <li>■ Increased respiratory rate</li> <li>■ Increased effort of breathing</li> <li>■ Altered texture or volume of secretions</li> <li>■ Increased heart rate</li> <li>■ Altered colour and/or temperature of the child</li> <li>■ Distended abdomen or altered feeding status.</li> </ul>           If the child has an emergency care plan this must be taken with them to the hospital         </li> </ol>

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## Suctioning Via Tracheostomy

Performance criteria/ knowledge required	Comments/Guidance								
<p><b>1. Demonstrate how to use portable &amp; walled suction, and hand/foot pump:</b></p> <ul style="list-style-type: none"> <li>■ Demonstrate how to charge, set and test pressures and connect suction equipment</li> <li>■ Describe when you would use hand/ foot pump (and therefore the importance)</li> </ul> <p><b>2. Aware of indications/complications for suction in a child with a tracheostomy</b></p> <ul style="list-style-type: none"> <li>■ Discuss possible indications for suction (see comments)</li> <li>■ Observe then suction the child when appropriate &amp; following assessment</li> </ul> <p><b>3. Demonstrate appropriate procedure for suctioning via tracheostomy</b></p> <ul style="list-style-type: none"> <li>■ Describes preparation:           <ul style="list-style-type: none"> <li>• Able to explain precautions for hand hygiene/ use of PPE.</li> <li>• Recognise the need for suctioning</li> <li>• Able to explain what the correct catheter size is, what pressures to use, and what the significance of not doing this correctly could mean for the child.</li> <li>• What monitoring, assessment are in place during suctioning</li> </ul> </li> <li>■ Explain procedure and demonstrate appropriate suction technique           <ul style="list-style-type: none"> <li>• Introduce catheter without applying suction, to the correct length, apply continuous suction whilst withdrawing catheter (do not rotate) catheter. Follow Infection Control Guidelines</li> </ul> </li> <li>■ Dispose of suction equipment in clinical waste and wash hands/apply alco-gel</li> </ul>	<p><b>Indications for suctioning may include:</b></p> <ul style="list-style-type: none"> <li>■ Noisy breathing (bubbling/ raspy sounds)</li> <li>■ Visible secretions at the tube opening</li> <li>■ Child restless or irritable</li> <li>■ Child's breathing is faster or slower, or there is an increased effort to breathe</li> <li>■ Change in saturation and HR</li> <li>■ Colour different from normal</li> <li>■ No noise via tracheostomy could indicate blockage</li> <li>■ Nostril flaring</li> <li>■ Chest not rising and falling with breathing</li> </ul> <p><b>Size suction catheter by ID x2 as maximum eg. with 3.5 tracheostomy use 7.0 Fr catheter</b></p> <table border="0"> <tr> <td>Age</td> <td>Suction Pressure Guidance</td> </tr> <tr> <td>Neonate</td> <td>-8 to -10.6 Kpa (-60 to 80 mmHg)</td> </tr> <tr> <td>Child</td> <td>-10.6 to 13.3 Kpa (-80 to 100 mmHg)</td> </tr> <tr> <td>Adolescent/Adult</td> <td>≤16 Kpa (&lt;120 mmHg)</td> </tr> </table>	Age	Suction Pressure Guidance	Neonate	-8 to -10.6 Kpa (-60 to 80 mmHg)	Child	-10.6 to 13.3 Kpa (-80 to 100 mmHg)	Adolescent/Adult	≤16 Kpa (<120 mmHg)
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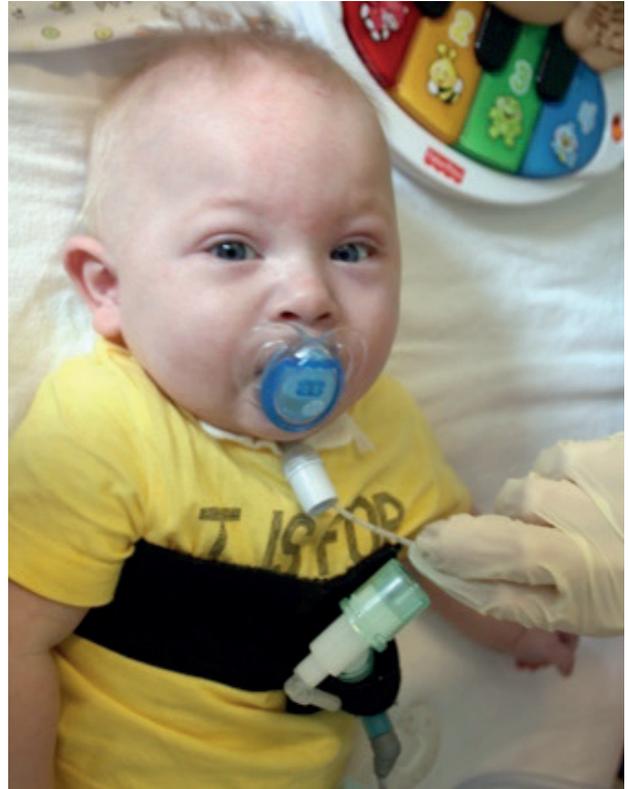
## Suctioning Via Tracheostomy (continued)

### 4. Understand the importance of a change in secretions

- Recognise the signs of infection
- Aware of who to contact if secretions change
- Refer to individual Care Plans regarding specific guidance

### 5. Demonstrate how to clean and store suction equipment

- Can describe importance of cleaning and storage and comply with local policy



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## Tracheostomy Care

### Performance criteria/ knowledge required

#### 1. Assess tracheostomy site:

- Demonstrate inspection of tracheostomy stoma and surrounding skin
- Discuss signs of site infection/ skin breakdown
- Discuss appropriate action if concerns re: stoma site e.g. swabs & report findings/ensure further review of site

#### 2. Clean and change ties at tracheostomy site

- Discuss reasons for changing tapes daily
- List the equipment to prepare before changing tapes
- Discuss potential problems with changing ties
- Explain & demonstrate procedure for cleaning tracheostomy site and changing dressing and ties (Figure 1)

#### 3. Routine tracheostomy change

- Discuss the tube in use and any specifics relating to it such as cuff care, duration of use, cleaning instructions and MRI compatibility
- Describe frequency for changing tracheostomy (based on manufacturers guidelines)
- Frequent changes may be done in hospital to facilitate training
- Describes and demonstrate the process as per bedside guidelines (Figure 2)

#### 4. Understand which tube is in use

- Specifics related to tube in use eg. cuff inflation, how many times it can be re-used

Figure 1



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## Tracheostomy Care

### Performance criteria/ knowledge required

#### 5. Clean and store tracheostomies appropriately

- Describe and demonstrate appropriate cleaning of tracheostomy
- Demonstrate awareness of manufacturing cleaning procedure

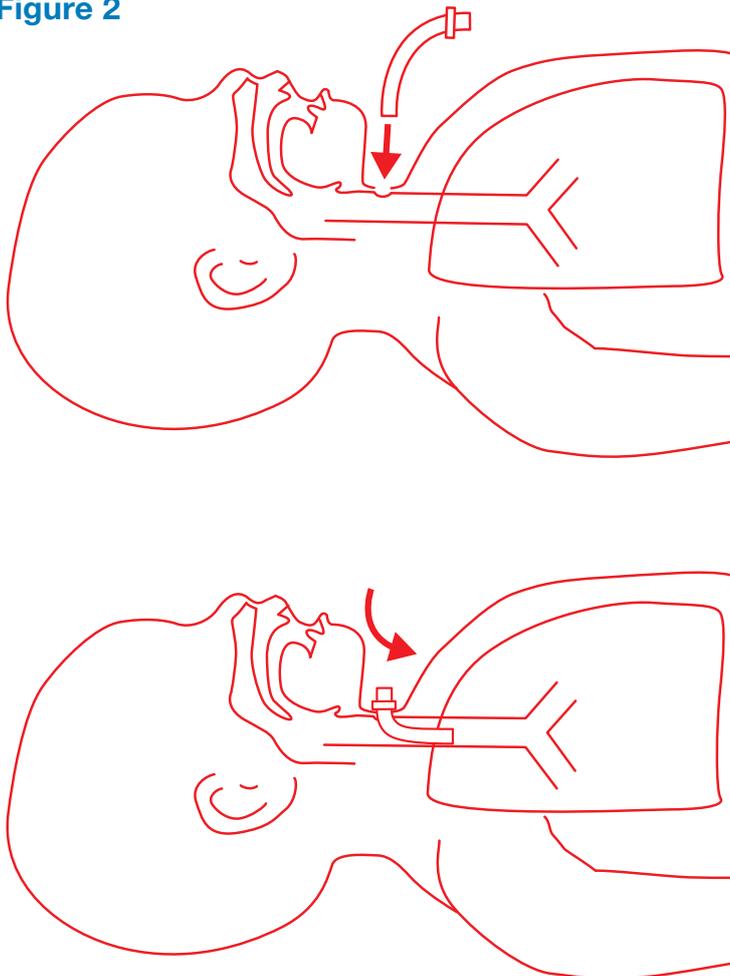
#### 6. Demonstrate awareness of granulomas (internal and external)

- Explain how granulomas may form and the signs seen eg. trauma with suction, bleeding, difficult to pass catheter through the tube, external granulations at the stoma

#### 7. Care of patient with cuffed tracheostomy

- Explain indications for cuffed vs. uncuffed tracheostomy if cuffed tube in use
- Explain procedure for inflating, deflating and monitoring cuff
- Explain risks and indications for cuff deflation eg. aspiration, increased leak around tracheostomy
- Need to deflate cuff prior to tracheostomy change
- Extra equipment in the Emergency Box – depending on type of cuff used

Figure 2



- Wash hands
- Use PPE as per local policy
- Lubricate new tube with a “dot” of water-based lubricant on the outside bend of the tube
- Insert introducer into the tube
- Position the rolled up towel under the child’s shoulders, as per tape changes, swaddle baby if appropriate.
- Place clean tapes behind the baby/ child’s neck
- Assistant should hold the tube in position using either their thumb and index finger, or index and middle finger
- Tube changer should cut the ties between knot and flange
- Remove the dirty ties
- Remove the tube from the stoma with a curved action
- Quickly insert new tube with a curved action
- Remove introducer
- The assistant should take over and hold the tube in position
- The stoma area and back of the neck should be cleaned and dried with the water and gauze using a clean technique
- Secure tube with cotton ties

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## Emergency Procedures

### Performance criteria/ knowledge required

- 1. Complete Basic Life Support training as per Resus Council Guidelines/Resus Algorithm on page 13**
- 2. Procedure for a blocked tracheostomy tube:**
  - Suction the tracheostomy tube
  - Refer to BLS Guidelines if tube is blocked → suction catheter cannot pass through the tube
- 3. Describe the steps taken in the event of a tracheostomy becoming decannulated:**
  - decannulation should not occur, if it does its as a result of loose tapes or lack of appropriate supervision.
  - Help should be summoned immediately either by shouting or pulling the emergency button
  - Replace tube with same tube or the one size smaller
- 4. Perform a single person tracheostomy tube change:**
  - Discuss signs and symptoms that could lead to an emergency tube change
  - Discuss positioning the child during an emergency if alone
- 5. Discuss actions to be taken in case of a parent/family member collapsing at hospital/home:**
  - Call the emergency services, if you have received paediatric and adult BLS follow the relevant algorithm

### Comments/Guidance

**At the start of your shift always check the Emergency tracheostomy box is complete**  
Contents

- Tracheostomy same size
- Tracheostomy 0.5 smaller (PVC tube)
- Suction catheter to assist with railroading
- Spare cotton tapes
- KY jelly
- Scissors round ended

In addition to these items for use in an emergency you will also be given:

- Velcro ties
- Disconnection wedge
- Laerdal one way valve



- Ensure emergency box is securely shut
- Items removed from packaging for display purposes only

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# BASIC LIFE SUPPORT OF BABIES AND CHILDREN WITH A TRACHEOSTOMY

**Action to take on a blocked tube**

**Action to take if the tube fails to go in**

**SAFETY**

**Attempt to insert the smaller sized tube**

**STIMULATE**

**Attempt to pass the smaller tube into the stoma using a suction catheter (Seldinger Technique)**

**SHOUT**

**Check and open airway**  
Suction the tube

**If unsuccessful, ventilate via the nose and mouth if the underlying condition allows**

**If blocked change immediately**  
Caution if stoma is less than 1 month old

**Suction the tube**

**Assess for breathing**

**Rescue breathing**

**Signs of life**  
(Pulse check)

**Chest compressions**  
if appropriate

**Reassessment**

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## Care of the Child Ventilated Via Tracheostomy

### Performance criteria/ knowledge required

1. Demonstrate understanding of child's need for ventilatory support
2. Describe in basic terms difference between CPAP & Bilevel support and how ventilation works
3. Describe in basic terms how the mode(s) in use assist ventilation
4. Can identify the prescribed settings and records these appropriately
5. Are aware of the importance of a back-up batteries
6. Aware of frequency of ventilation circuit changes for different types of circuit used.

Refer to ventilator specific competencies (depending on machine in use)

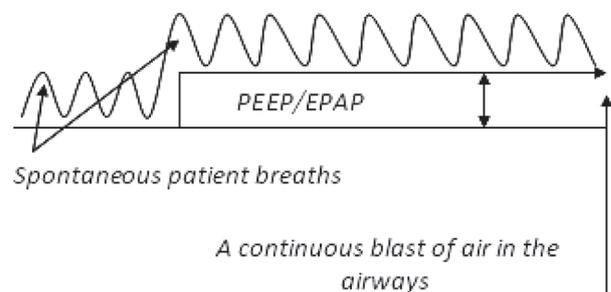
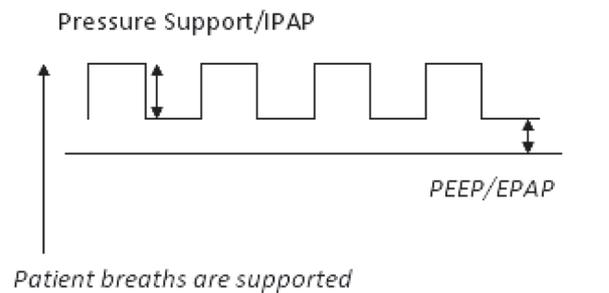
### Comments/Guidance

#### CPAP

- Requires the continuous airway child to make reasonable effort
- Helps by delivering a flow of gas to help keep the airways/ lungs open throughout inspiration & expiration
- DOES NOT deliver any breaths

#### Bilevel Support

- Can be used at higher levels of support where the child has less or no respiratory effort
- Additional support is provided on inspiration (either triggered or a set number of breaths per minute) to help move the chest.
- Expiratory pressure works in the same way as CPAP



- Aware of the risks of incorrect ventilation
- Explains the importance of alarms

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# Nebulisers Via a Ventilator Circuit

## Performance criteria/ knowledge required

## Comments/Guidance

Nebulisers are added in different ways depending on the individual, the drug administered and the type of ventilator circuit (please refer to your local guidelines as they vary from patient to patient)

1. **Demonstrate an understanding of the reasons for delivering medications via nebulisers.**
2. **Describe in basic terms how the nebuliser and air compressor work**
3. **Demonstrate and explain how to carry out the following:**
  - Prepare the nebuliser equipment and medication
  - Correctly position the nebuliser (using appropriate filters where required)
  - Turn nebuliser on/off
  - Monitor child for change in status
  - Safely remove/ finish nebuliser therapy
  - Appropriate cleaning of device

The picture (Figure 1) shows position of nebuliser for saline, salbutamol/DNase in single limb leaked circuit (In single limb circuits the expiratory leak **must never** be taken out of the circuit):

Example (Figure 2) of position of nebuliser for antibiotics in single limb leaked circuit (yellow filter only used during nebulisation) the expiratory leak **must never** be taken out of the circuit (ensure correct filter is used):

Example (Figure 3) of nebuliser position within a double limb circuit (NB this can be used for salbutamol, saline, Dnase or antibiotics as the expiratory filter scavenges exhaled antibiotic in the double limb circuit):

Example (Figure 4) of possible nebuliser position when using Aerogen Solo™ (mesh technology). NB recommended position may vary depending on the medication delivered and local practice. Please refer to individualised care plans to confirm.

**NB. Equipment and filters vary, ensure only the recommended equipment is used.**

Figure 1

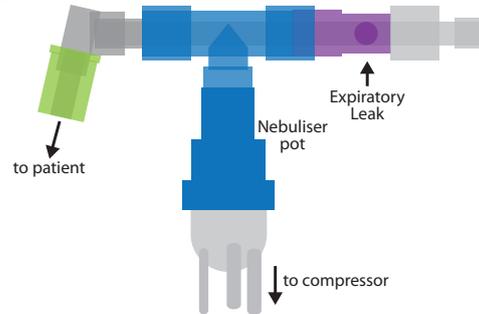


Figure 2

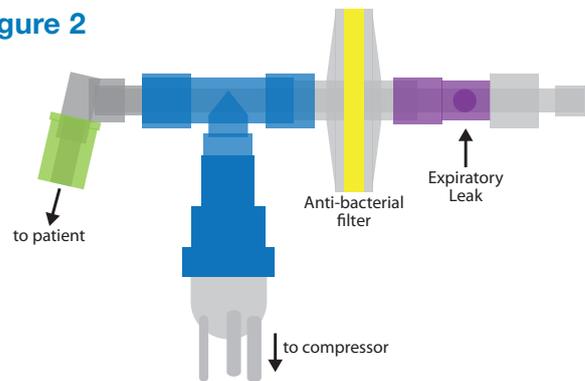


Figure 3

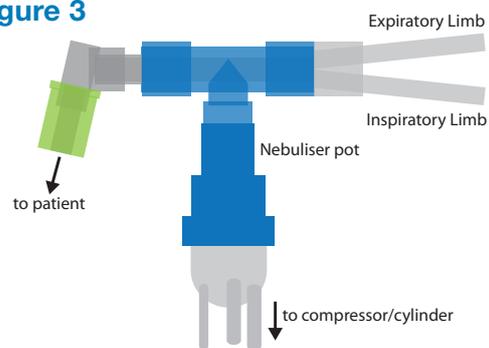


Figure 4



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# Humidification for a Child Receiving Long Term Ventilation via a Tracheostomy

## Performance criteria/ knowledge required

## Comments/Guidance

### 1. Discuss reasons for using artificial humidification

- Upper airway performs an important role in warming and humidifying inspired air
- Having a tracheostomy bypasses these normal warming and humidifying mechanisms
- The ventilator delivers dry gases (air and/or oxygen)
- During illness, with high temperatures secretions may become thicker and more copious
- Potential consequences of these 3 factors are:
  - Tracheostomy blockage
  - Risk of lung collapse/infection/damage

### 2. Selecting a suitable artificial humidification system is therefore essential

- **Identify different humidification devices**
- Heater wire humidification which is thermostatically controlled e.g. Fisher & Paykel MR850
- Heat moisture exchanger (HME) e.g. Portex Thermovent 600 or 1200, Intersurgical Hydrotherm

### 3. Assemble the humidification device into the ventilator circuit

- Where to position the humidifier
- How to assemble the circuit
- How to turn on/off & set for a child with a tracheostomy
- State the temperature required & where to document this
- How to troubleshoot alarms

- Over time dry, cold air damages and impair the movement of the cilia which line the airways. As secretions become thicker it becomes more difficult for the cilia to remove secretions. Small airways can become blocked with secretions which can cause lung collapse. Thick secretions can also block the tracheostomy
- Additionally, cold inspired air/oxygen increases heat loss from the lungs and can significantly drop a small infant's temperature
- The heated humidification systems have a plastic container filled with sterile water which is heated to a constant temperature. This constant temperature maximises the amount of water vapour in the air and provides very efficient humidification. This is a wet circuit system and the child cannot be mobile during use. They are used at night time or during the day when asleep.
- HME's which form part of the dry circuit, allow much more freedom of mobility. They consist of multiple layers of water repellent paper or foam membranes, which trap heat and moisture during exhalation. Only certain types are suitable for use in the ventilator circuit

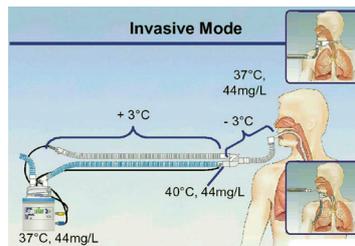
These are:

- Mini Vent HME which can be used for all small infants under 10kg
- Trach-phone HME with no weight restrictions (50-1000mls, this can also be used to aid phonation and allow the administration of Oxygen (up to 2 litres)
- Thermovent T which can be used for children over 10kg.

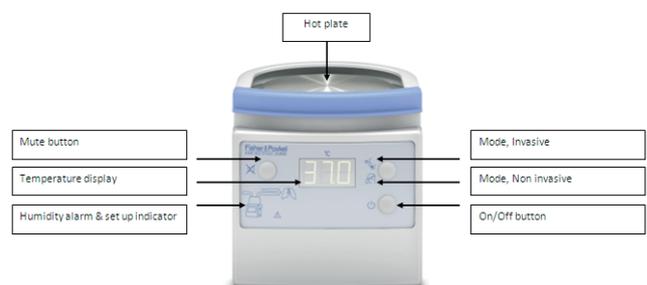


### Portex thermovent: 600 or 1200

### Intersurgical Hydrotherm



The electronic display on the main unit will display the lowest temperature either in the circuit or in the chamber. If you hold the mute button the unit will display both values.



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# Hand-Ventilation Via Tracheostomy

## Performance criteria/ knowledge required

## Comments/Guidance

**1. Demonstrate an understanding of when hand ventilation (self inflating bag) may be indicated:**

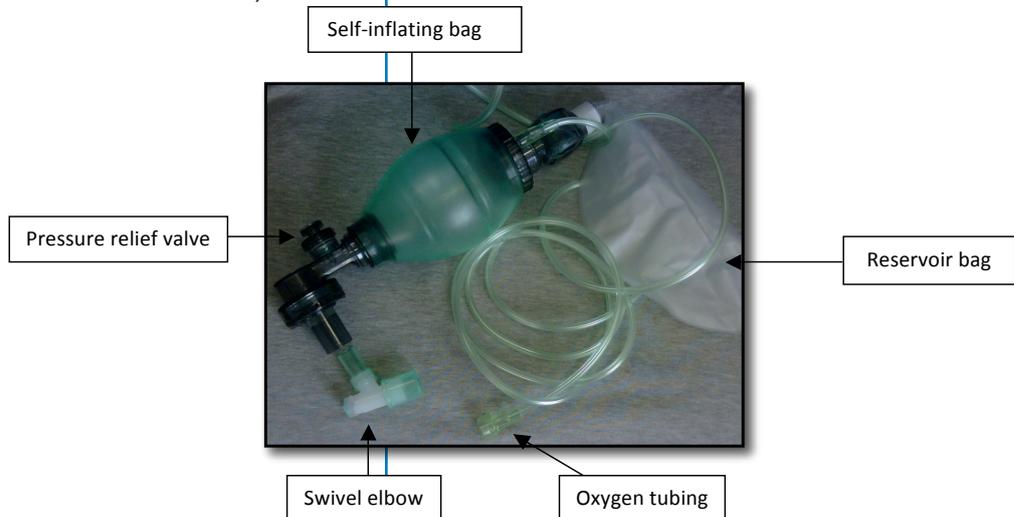
- Machine failure
- Acute deterioration/emergency
- Swapping machines (if child is 24 hours dependent)
- Changing circuit (if child is 24 hours dependent)

**2. Demonstrate how to check and set up equipment needed to hand ventilate:**

- Connect to oxygen if indicated on care plan
- Ensure there are no leaks apart from the pressure valve

**3. Demonstrate safe technique in supporting ventilation using an ambu-bag or self inflating bag:**

- Remember the child's "normal" respiratory rate
- Remember the child's "normal" depth of breathing
- Each inspiration should last approx 1-1.5 secs (dependent on the child)



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# Travel and Transport

Performance criteria/ knowledge required	Comments/Guidance
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**1. Identify all emergency equipment:**

- Check and recharge equipment as necessary
- Check the child’s emergency bag and equipment
- Ensure sufficient ventilator battery power is taken

**2. Obtain consent from parents/medical staff:**

- You should also gain consent from the leading medical team and family

**3. Calculate required amount of oxygen for the duration of the outing:**

- Length of journey (in Minutes) x Litres per minute prescribed = Total volume of O<sub>2</sub> need for trip (in Litres)
- Volume of O<sub>2</sub> cylinder (in Litres)/Litres per minute Used = Time, in Minutes that the cylinder will last
- Always ensure adequate O<sub>2</sub> volume is taken in case your journey time is extended

**4. Demonstrate taking the child out on a trip including using the buggy, safely secure the equipment:**

- As your confidence grows, trips off the hospital grounds can be taken unsupervised
- Before taking the child out for a day trips you must be fully competent in all aspect of care including Basic Life Support
- On return REMEMBER to plug all electrical equipment into mains to recharge
- REMEMBER in case of an acute deterioration outside the hospital 999 must be call immediately. Make sure an interim medical summary is taken out with the child



**Equipment needed for a trip off the ward or out of the house:**

- Emergency Tracheostomy box
- O<sub>2</sub> (if needed)
- Suction machine (battery power)
- Self-inflating bag
- Ventilator (including carry case, ensure batteries are charged)
- Appropriate specialist buggy
- Saturations monitor
- Hand suction pump
- Suction catheters
- Any emergency plan

**BOC Medical Cylinder data chart:**

Cylinder code	Capacity in litres
AZ	170
C	170
D	340
CD	460
E	680
J	6800

Journey time X prescribed O<sub>2</sub> requirement = Total amount needed for journey, double the amount for safety  
 i.e. the child is on 2L/min O<sub>2</sub> and it going out for one hour or 60mins so he needs 120ltrs, double this to 240ltrs to cover you in the event of an emergency

NHS No:

Relative/carers name:

## Promote Child's Neurodevelopment

Performance criteria/ knowledge required	Comments/Guidance
<p><b>1. Identify members of the MDT who should be liaised with to promote the child's development</b></p> <ul style="list-style-type: none"> <li>■ While they are an in-patient</li> <li>■ When they are discharged</li> </ul>	<p>a. SALT, OT, Physio, Dietitian, Play Specialist, Specialist Nurse, hospital Social Worker, Welfare Rights Advisor, Psychologist, School Teacher, Family Liaison Team, Nursery Nurses</p> <p>b. Community equivalents, discharge planning nurse, Specialist Nurse, School/Specialist Teacher</p>
<p><b>2. Discuss the environmental factors that may affect the child's development during their stay on the ward</b></p>	<p>Child in isolation, visiting rules (parents, siblings, other family), co-morbidities (eg. syndromes, cerebral palsy), play/school access, 24/24 activity and décor/space (compared to a home environment)</p>
<p><b>3. Describe the child's potential communication difficulties and strategies that may be used to address these</b></p>	<p><b>Difficulties:</b> compromised voice, co-morbidities, culture/language</p> <p><b>Strategies:</b> liaise with SLT, communication cards, interpreter, speaking valve (liaise with SLT/Physio), baby sign/makaton, family carers</p>
<p><b>4. Describe the child's potential play/cognitive difficulties and strategies that may be used to address these</b></p>	<p><b>Difficulties:</b> restrictions eg. sitting/weak muscles/environment, co-morbidities, culture, premorbid activity</p> <p><b>Strategies:</b> liaise with OT and play specialists, normalising play, play sessions, school, increase opportunities for play in daily framework</p>
<p><b>5. Describe the child's potential motor/mobility (indoor and outdoor) difficulties and strategies that may be used to address these</b></p>	<p><b>Difficulties:</b> weak muscles, limited positioning, equipment, co-morbidities, environmental considerations (stairs/infection control/transportation)</p> <p><b>Strategies:</b> liaise with Physio, seating, trolleys, buggies, car/bus, exercises, play</p>
<p><b>6. Describe the child's potential social/personal difficulties and strategies that may be used to address these</b></p>	<p><b>Difficulties:</b> family opportunity to be carer, access to wider family/friends, environment (cultural practices), dignity/privacy, space, language, access to school/nursery</p> <p><b>Strategies:</b> liaise with Family Liaison Team, empower parents, opportunities for play and personality development, appropriate interactions, access to school/play time</p>
<p><b>7. Identify your role in promoting the child's development</b></p>	<p>Being aware of above issues, helping to access the strategies identified, be mindful of parental roles and responsibilities</p>
<p><b>8. Discuss the importance of maintaining a day and night routine</b></p>	<p>Consistency, protected time (with parents/for socialisation/for developmental play), establish child's own routine independent of ward/nursing agenda, empower patient/family. Develop a daily framework/timetable</p>

NHS No:

Relative/carers name:

## Knowledge of Medications

Performance criteria/ knowledge required	Comments/Guidance
<p><b>1. Identify the uses of medication for the individual child:</b></p> <ul style="list-style-type: none"> <li>■ Identify potential side effects of the medication</li> </ul> <p><b>2. Identify factors which may indicate the child requires medication and refer this concern to parent, guardian or professional:</b></p> <ul style="list-style-type: none"> <li>■ Pain</li> <li>■ Discomfort</li> <li>■ Changes in vital signs</li> <li>■ Fever</li> </ul> <p><b>3. Identify different ways in which medications can be given:</b></p> <ul style="list-style-type: none"> <li>■ Oral</li> <li>■ Nasogastric tube</li> <li>■ NasoJejunal tube</li> <li>■ Gastric feeding tube               <ul style="list-style-type: none"> <li>• PEG or Button</li> </ul> </li> <li>■ Nebulised (see competency 11 for setting up a nebuliser circuit)               <ul style="list-style-type: none"> <li>• Attached to the ventilator</li> <li>• Disconnected from the ventilator</li> </ul> </li> </ul>	<p style="text-align: center;"><b>List the above patients current medication and purpose</b> (NB This would not act as a prescription chart)</p>

NHS No:

Relative/carers name:

# Monitoring and Maintaining NIPPY Junior+™ Ventilator

## Performance criteria/ knowledge required

## Comments/Guidance

1. **Demonstrate and discuss how to check the alarm limits and function**
2. **Can explain what alarms can indicate and how to respond to these** (see comments)
3. **Demonstrates and can explain how to carry out the following:**
  - Turn ventilator on/off
  - Can check the functioning of the ventilator prior to connecting to the child
  - Can demonstrate an understanding of the screen by describing the function of each key
  - Can identify whether a breath is patient triggered or given by vent (i.e. back-up breath)
  - Can identify whether mains power or battery is in use
  - Can connect and use battery power sources
  - Can identify the rear inlet filter and demonstrate how/ when to change it
  - Can silence alarms and take off mute

### Check alarms at the start of each shift and document

- When tubing is first disconnected check that low pressure/disconnect and/or low tidal volume alarms are triggered
- Occlude the vent circuit whilst running and check the high pressure/low tidal volume alarms are triggered

### Ventilator alarm goes off

#### NIPPY junior+™ Modes commonly used

##### PSV

- Inspiratory pressure support on triggered breaths and back-up breaths (delivered if the patient is not triggering)
- The length of breath is determined by the patient (unless it is a back-up breath)

##### PCV

- Inspiratory pressure is provided on triggered and back up breaths (delivered if the patient is not triggering)
- The length of breath (inspiratory time) is set for all breaths

##### CPAP

- As described on p 14 this is not a mode of ventilation as no breaths are delivered

### If concerned with the machines

- **Hand ventilate**
- **Call for help**
- **Change to other ventilator**



Exact function of alarm settings and ventilator configuration may vary due to ventilator software upgrades. Therefore please note that the information above is for guidance only – please ensure that you keep up to date with information from the ventilator company directly.

NHS No:

Relative/carers name:

## Monitoring and Maintaining NIPPY Junior+™ Ventilator (continued)

### Performance criteria/ knowledge required

### Comments/Guidance

**4. Demonstrate care of ventilation circuits**

- Able to demonstrate how to put together wet circuit (i.e. with heated humidification)
- Able to assemble dry circuit (i.e. HME in circuit)
- Aware of how often to change circuits and where to document
- Can identify & explain the purpose of the exhalation leak
- Can describe the bacterial filter, know where it should be placed and how often to change it

**5. Can explain how to administer oxygen via circuit**

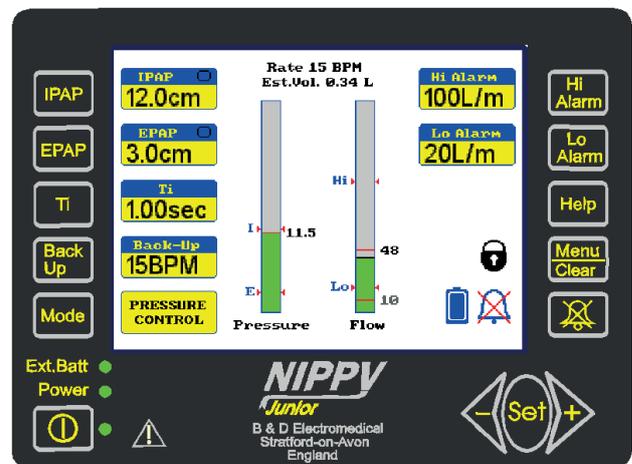
**6. Explains purpose of inlets and fans & aware of how to position ventilator safely**

**7. Aware that ventilator manuals should be kept in bedspace and aware of arrangements for managing ventilator problems once home**

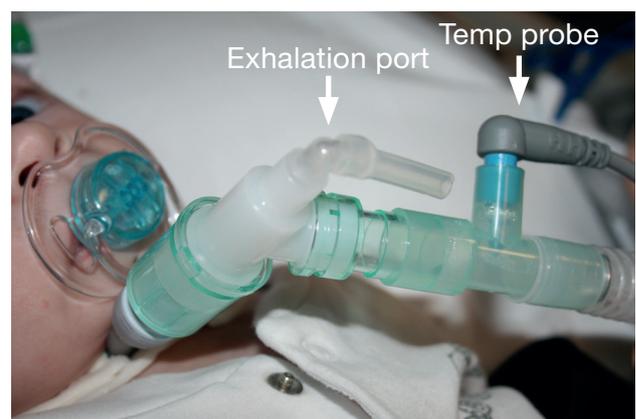
- Remember if you have a issue with a ventilator switch to the back up/spare ventilator

**Other alarms to describe:** Disconnect; Apnoea; High breath rate; Low battery/ Running on battery

**Screen parameters that should be understood:** IPAP; EPAP; trigger insp; trigger exp; rate; estimated tidal volume; Ti; back up rate; mode; pressure bar & flow bar



Ensure that an expiratory leak of the correct type is present next to the tracheostomy in single limb circuits:



Exact function of alarm settings and ventilator configuration may vary due to ventilator software upgrades. Therefore please note that the information above is for guidance only – please ensure that you keep up to date with information from the ventilator company directly.

NHS No:

Relative/carers name:

## NIPPY: Possible Alarm Causes and Actions

<b>Disconnection/Leak/ Low pressure/ Low VTE/Low MVE</b>		<b>Low flow may indicate blockage or obstruction</b>	
<b>1 Assess child</b> <b>Accidental decannulation</b> (i.e. tracheostomy has come out)	<b>Action</b> Immediately insert tracheostomy  If difficulty follow <b>emergency algorithm</b>	<b>1 Assess child</b> Possible causes include: <b>Blocked tracheostomy</b>	<b>Action</b> <b>Emergency algorithm:</b> 1. Suction 2. Emergency tracheostomy change
<b>2 Assess child</b> Possible causes include: <b>Leak around tracheostomy</b> (particularly when asleep)	<b>Cause</b> - some leak may be tolerated and may be due to position of child – discuss with community ± medical teams, who can consider need for cuffed trache or upsize	<b>2 Assess child</b> <b>Retained secretions/ increased pulmonary resistance etc</b>	<b>Action</b> <ul style="list-style-type: none"> <li>suction, consider need for nebulisers, physiotherapy</li> <li>refer to advanced treatment plan</li> <li>discuss with community or medical team</li> </ul>
<b>3 Assess equipment</b> <b>Disconnection within circuit</b> (Follow circuit from child through to ventilator and ensure everything is connected – NB humidifier connectors etc may be slightly loose)	<b>Action</b> <ul style="list-style-type: none"> <li>Reconnect any loose connections</li> <li>Re-assess</li> </ul>	<b>3 Assess equipment</b> <b>Circuit blockage</b> (Follow circuit from child through to ventilator and ensure it is not kinked or obstructed)	<b>1 Assess child</b> <ul style="list-style-type: none"> <li>Correct fault</li> <li>Re-assess</li> </ul>
<b>Is the alarm set appropriately</b> (i.e. as previously recorded and checked at start of shift)	<ul style="list-style-type: none"> <li>Check alarm settings are as prescribed and re-set if any discrepancies</li> </ul>	<b>Is the alarm set appropriately</b> (i.e. as previously recorded and checked at start of shift)	<ul style="list-style-type: none"> <li>Check alarm settings are as prescribed and re-set if any discrepancies</li> </ul>

If the child is compromised and you can't resolve the issue rapidly – hand ventilate and call for help

Exact function of alarm settings and ventilator configuration may vary due to ventilator software upgrades. Therefore please note that the information above is for guidance only – please ensure that you keep up to date with information from the ventilator company directly.

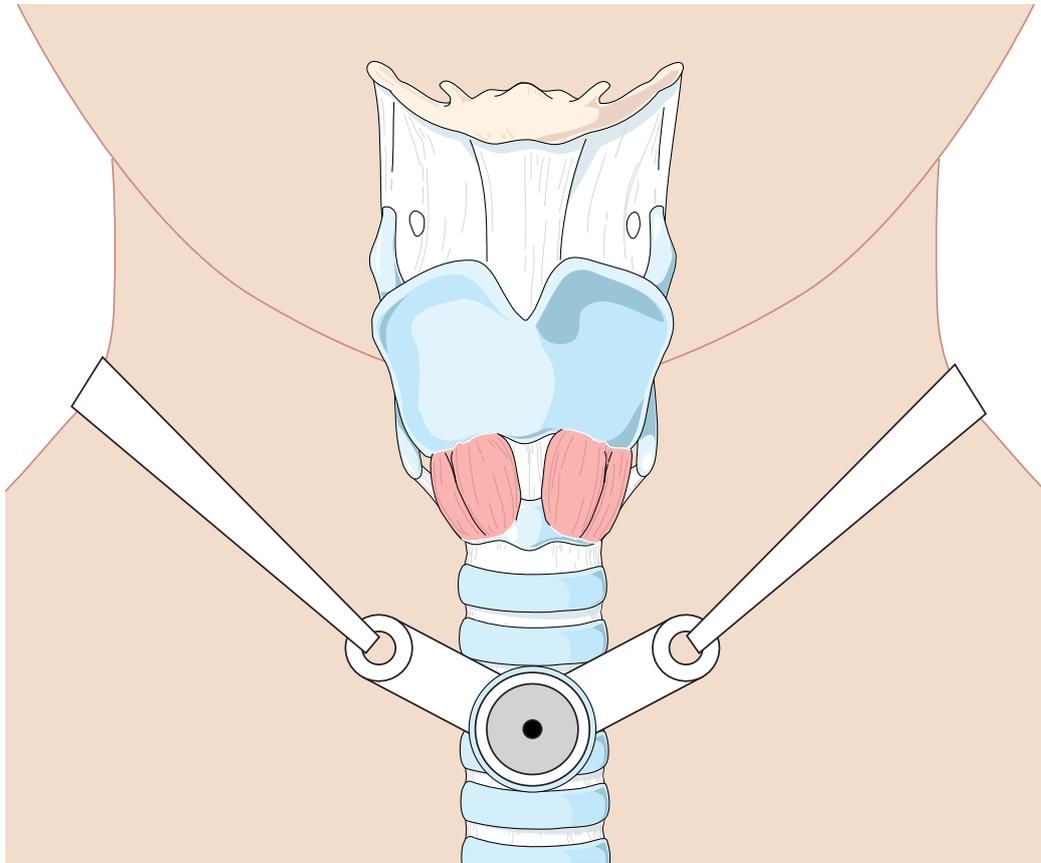
NHS No:

Relative/carers name:

NHS No:

Relative/carers name:

# A Joint Document for Staff and Carers Working with Long Term Tracheostomy Ventilated Children



## Sign Off Records

Child's Name:

Hospital Number:

Date of birth:

Consultant:

Ward:

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Demonstrate Health and Safety Awareness and Bedside Checks</b>					
1. Identify potential hazards and dangers of the ward environment – carry out bedside checks					
2. Assess the child's immediate environment for health and safety.					
3. Demonstrate the safety checks at the beginning of each shift.					
<b>Hand Washing and Hygiene</b>					
1. Demonstrate effective hand washing.					
2. Discuss how infection can spread.					
<b>Personal Hygiene Needs of the Child</b>					
1. Demonstrate how to assess the oral status of the child.					
2. Safely bath a child with a tracheostomy either attached to a portable ventilator or with Swedish nose.					

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Action Plan for Clinical Deterioration</b>					
1. Demonstrate how to take the child's vital signs (if taught to do so).					
2. Discuss normal parameters for the child and outline the course of action to be taken if there is a change in their condition.					
3. Know how to access emergency contact numbers.					
4. Demonstrate how to recognise signs of distress or changes in clinical condition.					
<b>Tracheostomy Care – General Points</b>					
1. Discuss the items in the emergency box and be familiar with each item and how it would support a tracheostomy emergency.					
2. Be familiar with the tracheostomy information charts.					
3. Be familiar with the appropriate Heat and Moisture Exchanger (HME) to use					

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Tracheostomy Care – Suctioning</b>					
1. Demonstrate how to use and set up portable and walled suction					
2. Recognise the need for and are aware of and can discuss the implications and complications of suctioning a child with a tracheostomy discuss rational and how to minimise complications.					
3. Explain procedure and demonstrate appropriate suction technique (using correct catheter size, correct technique, setting correct pressures, correct handling and disposal of equipment.					
4. Demonstrate how to assess and record secretions appropriately. Discuss signs of infection/concern.					
5. Demonstrate how to clean and store suction equipment.					
<b>Tracheostomy Care – Stoma care and Tape changes</b>					
1. Assess tracheostomy stoma and surrounding skin.					
2. Have an awareness of actions to take on skin breakdown, granulation tissue and how to manage or who to contact.					
3. Demonstrate the correct positioning of the child for a tape change and are able to prepare all the necessary equipment.					
4. Demonstrate the correct and safe holding of the tube during a tape change.					
5. Demonstrate the correct technique of carrying out a tape change – including positioning, cleaning and securing. (has watched podcast)					

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Tracheostomy Care – Tube Changes</b>					
1. Understand which tube is in use and able to discuss the specifics relating to it (such as duration of use, cleaning and storage)					
2. Demonstrate the correct positioning of the child (manikin) and prepare the correct equipment to perform a tube change					
3. Demonstrate the correct procedure of carrying out a tube change.					
4. Care of patient with a cuffed tracheostomy and the specifics related to their use (day to day (e.g.: timings of cuff deflations, how to inflate/ deflate cuffs).					
<b>Emergency Procedures</b>					
1. Be familiar with the Tracheostomy Resuscitation algorithm.					
2. Discuss the potential emergency situations (blocked tube, BLS, Action to take when a tube cannot be replaced)					
3. Discuss the emergency equipment to be carried understand the rationale for each item.					
4. Demonstrate BLS on a manikin – to include action to take on a blocked tube, including BLS and action to take if a tracheostomy tube cannot be reinserted (Selinger Technique)					
5. Perform a single person tracheostomy tube change					
6. Describe the steps that should be taken in the event of a tracheostomy becoming accidentally decannulated					

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Care of the Child Ventilated Via Tracheostomy</b>					
1. Demonstrate understanding of child's need for ventilatory support.					
2. Describe in basic terms difference between CPAP & BiLevel support and how ventilation works.					
3. Describe in basic terms how the mode(s) in use assists ventilation.					
4. Can identify the prescribed settings and records these appropriately.					
5. Aware of importance of back-up batteries.					
6. Be aware of frequency of ventilation circuit changes.					
<b>Nebulisers Via a Ventilator Circuit</b>					
1. Demonstrate an understanding of the reasons for delivering medications via nebulisers					
2. Describe in basic terms how the nebuliser and air compressor work					
3. Demonstrate and explain how to carry out each task as described on page 15					

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Humidification for a Child Receiving Long Term Ventilation via a Tracheostomy</b>					
1. Discuss reasons for using artificial humidification in a child with tracheostomy.					
2. Identify different humidification devices.					
3. Assemble the humidification device into the ventilator circuit.					
4. Appropriate selection and assembly of the Heat and Moisture Exchanger					
<b>Hand-ventilation Via Tracheostomy</b>					
1. Demonstrate an understanding of when hand ventilation may be indicated.					
2. Demonstrate how to check and set up equipment needed to hand ventilate.					
3. Demonstrate safe technique in supporting ventilation using a self inflating bag.					
<b>Travel and Transport</b>					
1. Identify all emergency equipment.					
2. Obtain consent from parents /medical staff.					
3. Calculate required amount of oxygen for the duration of the outing.					
4. Demonstrate taking the child out on a trip including using the buggy, safely secure the equipment.					

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Promote Child's Neurodevelopment</b>					
1. Identify members of the MDT who should be liaised with to promote the child's development.					
2. Discuss the environmental factors that may affect the child's development during their stay on the ward.					
3. Describe the child's potential communication difficulties and strategies that may be used to address these.					
4. Describe the child's potential play/cognitive difficulties and strategies that may be used to address these.					
5. Describe the child's potential motor/mobility (indoor and outdoor) difficulties and strategies that may be used to address these.					
6. Describe the child's potential social/personal difficulties and strategies that may be used to address these.					
7. Identify your role in promoting the child's development.					
8. Discuss the importance of maintaining a day and night routine.					

NHS No:

Relative/carers name:

Competencies section required to be completed	Observed/ discussed (date & Sign)	Performed under supervision (date & sign)	Achieved (trainer sign & date)	Trainee sign & date when competent	Remarks
<b>Knowledge of medication</b>					
1. Identify the uses of medication for the individual child.					
2. Identify factors which may indicate the child requires medication and refer this concern to parent, guardian or professional.					
3. Identify different ways in which medications can be given.					
<b>Monitoring and Maintaining NIPPY Junior+™ Ventilator</b>					
1. Demonstrate and discuss how to check the alarm limits and function.					
2. Can explain what alarms can indicate and how to respond to these.					
3. Can silence alarms and take off mute.					
4. Demonstrate and explain how to carry out each task as described on p25.					
5. Demonstrate care of ventilation circuits.					
6. Explain how to administer oxygen via ventilator circuit.					
7. Explains purpose of inlets and fans & aware of how to position ventilator safely.					
8. Aware that ventilator manuals should be kept in bed space and aware of arrangements for managing ventilator problems once home					

NHS No:

Relative/carers name:

NHS No:

Relative/carers name:

Patient Hospital No: \_\_\_\_\_

Relative/carers name: \_\_\_\_\_

## Tracheostomy and Ventilation Competency Certificate

I certify that I (name of assessor) \_\_\_\_\_  
 have a current NMC registration or I am affiliated with a Professional governing body. I am experienced and have attained my own competency in Tracheostomy and Ventilator care and teaching, in order that I am able to assess and sign off the competency of the carer below.

Print full name \_\_\_\_\_ Designation \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

I certify that I (name of carer) \_\_\_\_\_  
 have undergone a period of theory and practical training and am confident and competent in the procedures detailed in this booklet. I will only use this training in respect of the child specifically named on the front of this booklet and I will not carry out any procedures which have not been covered by this training.

I will continue according to local policy, ensure that my practice is kept up to date with regular checks and training. If there are any concerns I will seek appropriate advice and guidance in order for me to continue to operate within these competencies.

Print full name \_\_\_\_\_ Designation \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

I certify that (carers name) \_\_\_\_\_  
 has undergone a period of training and has been deemed competent to practice the procedures outlined in this booklet.

Print full name \_\_\_\_\_ Designation \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

**A copy of this document, when complete, must be kept in the child's medical notes.**