

# Healthcare Professional (HCP) Paediatric Long-Term Ventilation (LTV) Competency Guidance Document

Version 1.0 December 2023. To be reviewed by December 2024



# Scope of this document

This competency document (2022) was amended from a competency document developed by Tracheostomy and Long-Term Ventilation (LTV) Specialists, and the Paediatric Pan London Long Term Ventilation (PPLLTV) Group. The PPLLTV Group is a group of clinical Nurse Specialists and Allied Health Professionals. The authors are experts in the care of paediatric Tracheostomy, Tracheostomy LTV and Non-invasive Ventilation (NIV) and work within the Operational Delivery Networks (ODN) of East of England, North and South Thames, Thames Valley and Wessex, and Yorkshire and Humber. These competencies are aimed at Healthcare Professionals (HCP) working outside of the main Tertiary settings and looking after patients in their local healthcare environment. These competencies are freely available for use by all, but practitioners should always refer to their local guidance if planning to use them in their own service.

This document is a guide for the assessor to enable sign-off of the associated competency document. It follows the same format as the HCP Paediatric LTV Competency Sign-off Document and has been devised to enable the assessment of a Healthcare Professional's (HCP) competence to care for a child and young person (CYP) requiring a tracheostomy and LTV as well as those requiring NIV on a long-term basis. This HCP Paediatric LTV Competency Guidance Document is to be used in combination with any relevant user guides/ guidance notes for the ventilators in use. **The LTV Guideline (2023) developed by the Paediatric LTV ODN Collaborative can also be used to support this document.**

This document has been divided into two sections: **Section 1** covering the Core LTV Competencies including the theory and care required universally for all patients requiring LTV and **Section 2** covering the equipment that may be required. The competencies in which there are differences between Tracheostomy ventilated patients and those using other ventilator interfaces, such as NIV masks etc. have been highlighted through splitting the sign-off box for that competency (TrLTV and NIV).

The aim of the competency document is for the HCP to have the ability to **safely** care for children on Long Term Ventilation, with or without a Tracheostomy in situ. **An HCP is deemed competent to safely care for a CYP on LTV following completion of Section 1 including the LTV Competency Completion Record at the end of the section on the HCP Paediatric LTV Competency Sign-off Document.** They should then undertake any relevant training for each piece of equipment that they may use. This can be done at a later date, as they use each relevant device. Section 2, the Ventilator Specific Training Record at the end of the competency document can then be completed for each device they have received training in.

The professional should demonstrate that they can undertake each relevant section and can consistently replicate each aspect of care in a variety of contexts. The expectations of HCPs without a professional registration may vary between trusts, it is advised that all professionals work within their scope of practice. Where medication administration and clinical assessment skills are referred to, a non-registered HCP should discuss with a senior staff member what is appropriate according to their local policy.

**Once the HCP feels confident and competent, they should sign each relevant competency in the HCP Paediatric LTV Competency Sign-off Document. Each competency will then be assessed and signed, by a qualified professional (Assessor) once competency has been deemed to have been achieved, using this HCP Paediatric LTV Competency Guidance Document to assist. The time in which confidence and competence is achieved will vary dependent on the HCP's level of experience and exposure.** An Assessor is described as a senior staff member. They should have clinical experience and competency in line with local policy as well as having experience in supervision and assessment. It is however, recognised that when introducing this competency document, there may be insufficient HCPs that have achieved these competencies to be supervisor and assessor of HCPs completing this process. Until such a time, a pragmatic approach should be applied.

# CONTENTS

Pages	
<b>Section 1</b> Pages 4-14	<ul style="list-style-type: none"><li>• Guidance for Training Schedule and Record of Assessors</li><li>• Guidance for Core LTV Competencies to be completed as a minimum</li></ul>
<b>Section 2</b> Pages 15-18	<ul style="list-style-type: none"><li>• Guidance for Equipment and Ventilator Specific Training Record</li></ul>

# Training Tables

The next 2 pages of the HCP Paediatric LTV Competency Sign-off Document have been created to provide evidence of training received and to document assessors that have signed the competency document. Below are examples of the pages you will find in the competency document.

## Training Schedule

Date & Time	Session	Trainer name	Trainer Signature
<p><i>This section requires you to input any training sessions completed relating to Long Term Ventilation care. This can include Ventilator Company Representative training on equipment, Tracheostomy training, LTV Study Days, BLS, Bedside teaching etc.</i></p> <p><i>This can be completed by the HCP and the trainer. It can be utilised by the trainer to identify when another session is required for the HCP and particularly useful if many trainers are involved.</i></p>			

## Signature record of supervisors/assessors

Name	Designation	Signature	Initials
<p><i>Any HCP signing this document should input their details on this page. The member of staff signing each competency should have confidence the HCP can undertake each relevant section safely and can consistently replicate the aspect of care in a variety of contexts.</i></p>			
<p>Copies of these pages can be made once they are full.</p>			

## Section 1: Core LTV Competencies (Non-ventilator specific)

### Understanding the need for ventilation

**Discusses the different reasons a CYP may require ventilation**

Discuss issues such as airway resistance (obstructed upper airway, abnormal anatomy of upper airway, Obstructed Sleep Apnoea (OSA), lung compliance, increased airway resistance), weak respiratory muscles, cardiac impairment (abnormal anatomy of the thoracic cavity), spinal cord injury (SCI) and neurological impairment (poorly functioning chemo receptors and nervous system).

**Discusses the different types of ventilators and how to access ventilator specific information**



*LTV Guideline (2023)*

Aware that there are different ventilators available e.g. different makes, simple CPAP only devices for older, less dependent CYP and more complex life support ventilators. Discuss the use of ventilator user manuals, Ventilator Training Alliance (VTA) app, tertiary centre LTV Teams, ventilator company representatives, study days, teaching videos, LTV hub QR codes, teaching resources from the LTV ODN e.g. NHS Futures Paediatric LTV Page: [Paediatric Long Term Ventilation \(LTV\) Operational Delivery Networks \(ODN\) Collaborative - FutureNHS Collaboration Platform](#)

**Describes the differences between CPAP and BiPAP and the implications for the CYP**

Understands the concept of Continuous positive airway pressure as a one flow and how Bi-level involves an Inspiratory Positive Airway Pressure and Expiratory Positive Airway Pressure, can discuss the reason they may be used and how dependency on the ventilator is different

**Describes in basic terms the different Modes of delivering Bi-level ventilation (BiPAP) i.e. ST/ Pressure Support, Pressure Control**

Can explain what pressure support and pressure control is, discuss the settings involved such as IPAP, EPAP, trigger, back up rate, inspiratory time.

**Discusses the different levels of dependency of CYP on LTV and the differences between NIV and Tracheostomy ventilation**

Can discuss the management of the well and unwell CYP receiving LTV, complications and different management. The potential increased dependency of a CYP with a tracheostomy, advantages of having a permanent airway and the complication this can bring e.g. obstruction, displacement etc. Can recognise how the unwell NIV CYP may have increased respiratory/ventilation needs when unwell and how this may not be met via the NIV route and what escalation would involve. Aware of the importance of understanding why each individual CYP needs ventilation and what their individual dependency on this is e.g. CYP may tolerate all day off ventilator when well, however when unwell or asleep they may be fully ventilator dependent. To be aware of respiratory action plan.

**Discusses what RAMP is in basic terms and why this would be set for a CYP**

Can explain what RAMP is, how the ventilator initiates a lower pressure and then gradually increases to the pressures prescribed in the settings specific for that CYP. Able to discuss that its used for compliance, for non-dependent CYP, may not be appropriate when unwell and setting may need de-activating.

**Section 1: Core LTV Competencies (Non-ventilator specific)**

**Understanding the need for ventilation continued**

<p><b>Understands what a Respiratory Action Plan (RAP)/ Escalation Plan is and what to do if your CYP does not have one available to access</b></p>	<p>Can explain what a respiratory action plan is and how this would be used to guide treatment. If a CYP does not have one available, they should be able to discuss how to access either by contacting the tertiary centre LTV team, community nurses, GP/Consultants discharge letters, parents, out of hours respiratory/ICU team at the tertiary centre.</p>
<p><b>Discusses why a CYP may have more than one Program set</b></p>	<p>Understands why some CYP's may or may not have more than one setting, wet/dry circuits, well/sick , day/night settings.</p>
<p><b>Discusses what should be done if the settings are different from the prescribed ventilation plan</b></p>	<p>Ensure CYP is safe, escalate to nurse in charge, local medical team, contact tertiary centre, check respiratory action plan, check documentation to see if the changes made were planned but also ask medical team in case documentation has been forgotten. Consider changes made by parent/carers and potential safeguarding concerns. Discuss caution to be taken, putting settings back to original such as sudden pressure changes, reduction in support and how this can impact the CYP. A slow wean may be needed if the changes are significant, discuss with medical team and tertiary centre if appropriate. Follow local incident reporting policy.</p>
<p><b>Demonstrates daily safety checks that need to be completed for a CYP on NIV/Tracheostomy ventilation</b></p>	<p>Aware of local paperwork if applicable, LTV guideline to be used for reference.</p>

**Humidification**

<p><b>Discusses when an HME needs to be part of the ventilation circuit and when this may not be required</b></p>	<p>Discusses the different types of HME when on and off the ventilator, weight restrictions, oxygen delivery, wet and dry circuit, administering a nebulisers.</p>
<p><b>Explains why and when humidification is required</b></p>	<p>Discusses the use of humidification through the ventilator routinely, when unwell and changes in humidification needs, environmental factors.</p>
<p><b>Discusses different humidification devices for Tracheostomy and Non-Invasive Ventilation</b></p>	<p>Has knowledge of different ventilators/humidifiers, integrated and external, different tubing, HME for tracheostomy</p>

## Section 1: Core LTV Competencies (Non-ventilator specific)

### Humidification continued

**Discusses how humidification can be used if the CYP is suffering from thick tracheostomy secretions, severe oral dryness and nasal congestion, specifically how a change in environment may alter humidification needs**

Discusses the use of nebulisation to aid the clearance of thick secretions alongside the use of humidification. Understands the implications of a change in length of time on humidification, increasing temperature/level of humidification, the possibility of moving from the integrated humidification system to external if need is higher and how this can be achieved.

**Explains the importance of humidifier positioning**

Ensure an external humidifier is positioned below the ventilator and CYP, ensure the integrated humidifier is at CYP level or below. Understands the risk of water (rain out) mixing with electrical device and the risk to CYP's lungs from aspiration.

**Discusses the reasons for NOT transporting a CYP on a wet circuit and the importance of this**

Explains the risk of electricity and water mixing, water going into CYP'S lungs and aspiration risk when moving.

**Explains why an integrated humidifier cannot be used on a Tracheostomy**

Aware of temperature/humidity requirement of a tracheostomy, not as effective, infection risk.

### Oxygen

**Discusses the use of Oxygen according to CYP's Respiratory Action Plan (RAP) for routine and escalation management**

Understands the importance of knowing CYP normal Oxygen requirement and Saturation levels and respiratory action plan. Discusses the important of setting appropriate alarm limits on the saturation monitor according to CYP's normal parameter and the need for added monitoring/escalation if they are not achieving these. Discusses how to escalate appropriately and how to deliver Oxygen and follow an A-E assessment.

**Demonstrates and discuss the methods of Oxygen administration for a CYP on LTV, how this may differ between different ventilators and where this information can be found**

Discuss how Oxygen can be delivered via the ventilator, either administering through the circuit or entrained to the device from the back and the need to turn Oxygen off when not in use. Aware that different devices use different techniques and how to find ventilator specific information: manuals, VTA app, LTV hub QR codes, use of ventilator reps. Can discuss Oxygen use in relation the CYP both on and off the ventilator and escalate to LTV centre as per respiratory action plan.

## Section 1: Core LTV Competencies (Non-ventilator specific)

### Nebulisation

**Explains when a nebuliser may be required and can demonstrate how to deliver this to the CYP that has LTV with discussion of differences if the CYP is unwell, dependant or non-dependant on ventilation etc.**

Discusses what nebuliser treatment can be used and how this can be delivered, wet and dry circuit, CYP normal and escalation protocol, some CYP's may have antibiotic nebulisation routinely or in escalation plan. Consider CYP's ventilation needs and how the nebuliser should be delivered for differing dependency and the use of an aereoneb/jet nebuliser system.

**Demonstrates how to remove the nebuliser, clean equipment and discuss how frequently to change consumables**

Discusses the washing of equipment, how often consumable should be changed following local and manufacturers guidance. Where manufacturers guidance can be found: ventilator manuals.

**Discusses when nebulised antibiotics may be required. Discusses and demonstrates safe delivery of nebulised antibiotics to a CYP with LTV**

Check local policy, BNFC and local pharmacist. A filter may need to be added onto some of the nebulisers you are delivering. Consider other safety precautions that may be advocated by your local policy e.g. minimising people in the room, opening a window. Discuss why this is important, safety of CYP and staff.

### Ventilation operation Air inlet filters

**Explains the purpose of the air inlet and aware of the importance of keeping this clear**

Explain where the air is taken into the ventilator and how the blocking or partial blocking can result in insufficient delivery of pressures, overheating, increased battery use, machine malfunction, fire.

**Discusses how frequently the air inlet filter should be changed and that more frequent changes may be required and the reasons for this**

Discusses the different manufacturers guidance and where the information is located, how to check filters and the importance of this, increased changes may be needed for dusty properties, houses with animals, ventilator kept close to a carpeted floor, high ventilator requirements.

### Ventilator Power Supply

**Demonstrates how to connect the ventilator to the main power supply**

Discuss the importance of keeping the ventilator plugged in to the mains when not transporting and implication to the CYP if the power ran out: unable to ventilate, use of external battery and the charging of batteries.



## Section 1: Core LTV Competencies (Non-ventilator specific)

### Ventilator power supply continued

**Explains what to do in a power outage or evacuation**

Discuss the importance of daily checks, the need for planning, ensuring batteries are on charge, ventilator is connected to the mains and ventilator is charging, ensure the second ventilator (if appropriate) is fully charged when not in use, what are the considerations when moving a CYP, importance of emergency equipment, if site has a generator back up ensure ventilator is plugged into appropriate power source for this.

**Demonstrates where to locate battery life information on the ventilator. Discusses when batteries need charging, how to do this, the need to ensure the battery supply is sufficient for CYP dependency and factors that affect battery life**

Discuss how to check the battery charge of the ventilator, to ensure the batteries are charging/fully charged and the importance of this in their daily checks, understands what drains the battery and how this affects your running time off the mains.

**Discuss the differences between an internal/external battery and awareness that some ventilators may not have a battery. Discuss the implications of this and where this information can be found. Discuss factors affecting the battery life**

Check with parents, manual, contact reps or tertiary centre if there is a planned journey where battery life is not long enough. Discuss options to plug in machine intermittently as available. The importance of planning. Aware of where to find the ventilators estimated battery length (if applicable) Factors that affect battery life e.g. increased pressures, age of battery, extreme temperatures: hot/ cold etc.

### Circuits

**Discuss the different types of circuits that may be used in LTV**

e.g. single, double limb, wet and dry circuits: Aware of the CYP's specified set up. That there are different tubing for different patients weight/age, circuits for integrated and external humidifier, connections. Is able to discuss a single limb circuit and how the flow of air travels. There needs to be an awareness that there are double limb circuits but unlikely to see these outside a high dependency unit.

**Demonstrates the set-up of a wet and dry circuit for NIV and discusses the different parts in each circuit**

Can explain the difference uses of integrated humidifier (NIV) and external wet circuit, humidifier chamber, dry circuit, bacterial filter if appropriate, temperature probes, exhalation/leak port and why this is important in a single limb circuit

## Section 1: Core LTV Competencies (Non-ventilator specific)

### Circuits continued

**Demonstrates the set-up of a wet and dry circuit for TrLTV and discusses the different parts in each circuit**

Can set up a wet and dry circuit and explain the difference uses of the components: tubing, heater wires, humidifier chamber, HME, bacterial filter, temperature probes, exhalation/ leak port etc.

**Discuss the importance of an exhalation/ leak port on a single limb circuit, where it is located and demonstrate how to check patency**

Aware that there is an intentional leak and locate where the leak can be found on different circuits and interfaces, importance of a vented mask (NIV), how to check patency using a visual inspection and hovering hand over to check air is flowing through, the importance of this as part of your airway assessment in your A-E assessment.

**Discuss the risks if the exhalation/ leak port becomes blocked and explain what may block it**

Discuss how this can affect exhalation of CO<sub>2</sub>. Hypercarbia, if untreated may result in death. Aware of how to unblock the port such as readjusting interface, cleaning.

**Discuss the different sizes of circuit available, why a patient may be on the particular sized circuit and risks if they do not have the correct circuit in place**

Is aware how the 15mm and 22mm sized circuit related to the internal diameter of the tubing, to not rely on the colour or style as this can vary with manufacturers, the importance of ensuring you have the correct circuit, and be aware a learn circuit/calibration may need to happen if there is an intentional change of circuit size or type on some ventilators. Circuit type should only be changed in discussion with the patients' tertiary centre.

**Discuss when consumables (interface (NIV)/circuit/filters) need changing and why**

Discusses how to check this information, manufacturers guidance, local infection control policy (filters), use own judgment if consumable are visibly dirty

**Discuss how to troubleshoot common problems regarding circuit *e.g. failed learn circuit, leak, rain out, temperature variations, environmental influences***

Common problems, water in tubing, unintentional leak, different tubing, ensuring the right circuit is on the right profile, where to find this information: information given by the machine, manuals, VTA app, LTV Hub QR codes

### Ventilation operation - Alarms

**Discuss the importance of an A-E assessment when responding to your alarms**

Discusses a normal A-E assessment and discuss specific aspects to NIV and tracheostomy, Displacement, Obstruction, Pneumothorax, Equipment, Stomach (DOPES), delivery issues regarding leak, positioning, poor fitting interface. Two main causes of urgent alarms are either a blockage or a leak.

**Discuss the importance of having appropriate alarms set and the implications on ventilation if alarms are set incorrectly**

Able to identify that there is something wrong with the CYP's ventilation and complete an A-E assessment. If the alarms are not set appropriately the machine will not sound when ventilation is affected and the CYP can be at risk of harm. The alarm settings should not be changed unless guided by tertiary centre. Escalate any concerns to LTV Centre.

## Section 1: Core LTV Competencies (Non-ventilator specific)

### Ventilation operation – Alarms continued

<p><b>Demonstrate how to check the alarms are working and how often to do this</b></p>	<p>Whilst ventilator is running but not connected to the CYP cover end of circuit with a gloved hand ensuring an appropriate alarm for obstruction sounds, disconnect tubing ensuring an appropriate alarm for disconnection sounds. Cannot be done if the ventilator is on the CYP unless they tolerate disconnection or hand ventilated breaths are delivered.</p>
<p><b>Demonstrate how to troubleshoot alarms using an A-E assessment of the CYP</b></p>	<p>Discuss the importance of checking CYP before the ventilator, A-E assessment of CYP, DOPES then work way back to ventilator, where to find out alarms and what they mean in the manual, VTA app, LTV hub QR codes. Able to explain what the different priority alarms means such as red as a high priority.</p>
<p><b>Discuss the level of importance of alarms <i>e.g. information alarm and warning alarms</i></b></p>	<p>Able to discuss the difference in the priority alarms. Red Flashing bar – High priority and requires immediate response. Yellow Flashing bar – Medium priority requires prompt response. Yellow Steady bar is a low priority alarm and is an information alarm. All alarms should be responded to immediately and a full A-E assessment of the CYP should take place before attending to the ventilator. Direct supervision is required if alarms ate silences/suspended. Alarms should <b>NEVER</b> be ignored.</p>
<p><b>Discuss the processes to follow if you cannot find the cause of the alarm and who to contact</b></p>	<p>Ensure CYP is safe, refer to ventilation manuals, LTV hub QR codes, Ventilator Training Alliance app, escalate to LTV centre, ventilator servicing company.</p>
<p><b>Demonstrate and discuss how to solve unintentional leaks on an NIV interface</b></p>	<p>A-E assessment, observe the CYP, listening for noise and feeling for leak around the edges of the mask, re-adjust the mask using a 2 person technique where possible to reposition and tighten or loosen straps as appropriate, discuss what to do if the mask appears the wrong size, contact tertiary centre for advice.</p>
<p><b>Discuss the effect of some nebulisers in circuits and how this can trigger alarms</b></p>	<p>Aware the alarm may continue throughout the administration of a jet nebuliser but the importance to remain with the CYP throughout, if the alarm is triggering when using the aerogen, there is a problem as no alarm should be triggered.</p>

## Section 1: Core LTV Competencies (Non-ventilator specific)

### NIV interface

**Demonstrate how to fit the interface correctly and check the tightness of the straps. Explain the implications of a poorly fitted interface**

Is able to show or discuss how to fit the different interfaces and how to ensure it fits well and where this information can be found, LTV hub QR codes. To refer to tertiary centre if the mask is thought to be the wrong size. Troubleshooting such as mouth breathers, use of dummy, chin straps (if given by the tertiary centre).

**Discuss the different vented interfaces and the importance of the exhalation/ leak port**

Describe a vented and non-vented mask, checking exhalation/leak port by holding hand over port whilst ventilation running.

**Discuss the risk of CYP airway obstruction and action to take if this occurs**

A-E assessment, suction, positioning of CYP, removing interface and cleaning

**Explain early signs of a pressure sore and how to escalate appropriately**

Redness after 1 hour of removal of interface, escalate to tissue viability locally and to tertiary centre. If CYP has alternative interface consider alternating interfaces.

**Discuss how to obtain a new interface if required**

Discuss with LTV Centre regarding upsizing, or replacing interface. Routine changes should be manufacturer and LTV Centre driven or obtaining a replacement of the same mask already in use.

**Demonstrate how to clean and dry the interface and how often this should be carried out**

Checking manufacturers advice, tertiary centre, visual inspection of interface.

### Transferring of the patient

**Discuss the equipment needed to transfer, and how to safely secure all equipment**

Local checklists available and the LTV guideline.

**Demonstrate/ discuss how to calculate the amount of Oxygen and battery needed for transfer time**

BOC Medical Cylinder data chart:  
 Cylinder code= capacity in litres  
 AZ 170litres    CD 460 litres  
 C 170 litres    E 680 litres  
 D 340 litres    J 6800 litres

Ensure mains battery is plugged in prior to transfer, ensure portable batteries are fully charged, calculate oxygen requirement and ensure cylinders are full.  
 Journey time X prescribed O2 requirement = Total amount needed for journey, double the amount for safety.  
 For example, the CYP is on 2L/min O2 and it going out for 60 mins. Therefore, they need 60 x 2=120ltrs of oxygen. Double this so 120 x 2 = 240 ltrs to cover you in the event the trip is longer than expected

## Section 1: Core LTV Competencies (Non-ventilator specific)

### Transferring of the patient continued

**Discuss how to select the appropriate Bag-Valve-Mask with correct facemask (or laryngeal mask if appropriate)**

Discuss why a BMV is needed, how a BVM is still needed if an anaesthetic breathing circuit is being used due to the reliance of air/oxygen supply with the anaesthetic breathing circuit. Discuss BLS and tracheostomy specific BLS, discuss the importance of having knowledge of patent upper airway and the use of a laryngeal mask and when this is appropriate.

**Discuss the equipment needed and demonstrate how to check the function of the ventilator prior to transfer**

Discuss the importance and demonstrate how these checks will take place, ensure obstruction and disconnection alarms have been checked, ensure CYP is on ventilator and ventilating using an A-E assessment. Refer to the LTV guideline and local policy.

**Discuss the safe unpacking and recharging of equipment following a transfer**

Storing safely, ensuring equipment is put back on charge, replace any equipment used.

### Emergency Management

**Demonstrate an A-E assessment, describe signs of respiratory distress and actions to be taken**

Assess and treat A-E and ensure equipment is working, check airway patency, respiratory sounds, increase/decrease in respiratory effort, poor chest movement, increased PEWS, escalate to NIC and medical team.

**Discuss the escalation process for the unwell child using local resources such as PEWS**

Discuss local PEWS and SBAR policy

**Demonstrate and discuss the administration of Oxygen in an emergency via the ventilator and other means if there is a ventilator delivery failure**

How Oxygen is attached to ventilator, maximum that can be administered, Oxygen delivery via Ambubag, facemask, Nasal spec, trachy mask, Optiflow, does the patient have a second device, other ventilator devices within the trust acutely if deteriorating on advice from tertiary centre and/or transport team.

**Discuss how to contact the Tertiary LTV Centre and Retrieval Team for advice and escalation (if applicable- follow local escalation policy)**

Retrieval team, tertiary centre contact details, how to find contact numbers, respiratory team at tertiary centre if unknown or out of hours.

**Discuss how to find the CYP's escalation plan (if available) within the Respiratory Action Plan (RAP)**

Where this is found and how to access if not with parents – tertiary centre respiratory or PICU team should have access out of hours, in hours LTV team at tertiary centre.

## Section 1: Core LTV Competencies (Non-ventilator specific)

### Emergency Management continued

**HCP is up to date with BLS mandatory training and can discuss this in relation to a CYP requiring NIV in the event of a respiratory arrest**

Discuss BLS for CYP with tracheostomy LTV (NTSP emergency algorithm) and NIV (removal of NIV interface to perform BLS). Up to date with paediatric BLS. Discuss the teams that should be involved in the escalation, local escalation policy, the need to update and get advice from the LTV team at the tertiary centre and local retrieval team if appropriate.

**Demonstrate how to unlock the ventilator, make changes and re-lock the ventilator if required under consultation with the CYP's Tertiary LTV Centre and/ or the Retrieval Team (if applicable)**

Able to discuss where this information can be found if unsure: manual, VTA app, LTV hub QR codes. Discuss the importance of re-locking the machine and the risk of not doing this.

### LTV Competency completion record (Non-ventilator specific): Core LTV Competencies

Educator Confirmation:

*This should be completed by a senior staff member, with an Education role within the team. They should have clinical experience and competency in line with local policy as well as having experience in supervision and assessment. They should have either been aware of all the training done previously, or as a minimum, check the training record and schedule (pages 4 & 5), and check each assessor signature for each competency (pages 6-11) of the HCP Paediatric LTV Competency Sign-off Document.*

# Section 2: Equipment and Ventilator Specific Training Record

- The next section covers the usage of **specific ventilators and specific equipment** as different areas will use different ventilators and equipment such as circuits.
- This section is **not** a competency sign-off but is a **self-assessment training record** for the learner to record specific equipment training. The learner should sign against each point for each ventilator when teaching has been received.
- There is a ventilator training record at the beginning of the HCP Paediatric LTV Competency Sign-off Document (page 4)

## Section 2: Equipment and Ventilator Specific Training Record

### Ventilator operation

**Demonstrate how to turn the ventilator power on and off and determine if using mains or battery power**

Can locate plug to ensure ventilator is running on mains, locate on/off button and confirm if ventilation starts automatically, locate where indicator is for mains or battery use

**Demonstrate how to find out length of battery life**

Can discuss how to locate the battery life indicator on main screen. Some ventilators will estimate the battery time left but ensure ventilator is plugged into the mains as long as possible and external batteries are fully charge before starting a journey.

**Demonstrate how to turn on the ventilator and start ventilation and carry out safety checks**

Can confirm the need to start ventilation and if so, how this is done. Staff need to be aware that different ventilators start as soon as the ventilator is turned on and others need to have the button ventilation start confirmed once in the stand by mode. Importance of assessing patient on initiation of ventilation.

**Demonstrate how to check ventilator settings against the Respiratory Action Plan (RAP)/ Ventilator prescription**

Can locate ventilator settings against the prescription using RAP, check all profiles if applicable. Escalate to LTV centre if there are any concerns including no available RAP.

**Demonstrate how to discontinue the Ramp setting (if set) when acutely unwell**

Can locate the Ramp setting. This may be on the main screen or in settings but you should not need to unlock the ventilator to the clinical menu.

**Demonstrate how to change between CYP's set Programs (if applicable)**

Can discuss how to do this if only one program is set

**Demonstrate where the monitoring screen can be found on the device to ensure the ventilation is delivering effectively when on the CYP and aware of the need to carry out an A-E assessment of the CYP**

Can locate the screen and discuss what the monitoring screen is showing, pressure, flow, VT, etc.

**Demonstrate where the data can be downloaded from the ventilator e.g. USB port/SD card**

Can locate where the port card should go, not expected to know how to do this. You would not be doing without advice from the reps or tertiary centre.

**Demonstrate and explain how to identify if the CYP is triggering the ventilator or if the ventilator is delivering a mandatory breath**

Can explain how this is displayed on the ventilator.



## Section 2: Equipment and Ventilator Specific Training Record

### Circuits

**Discuss and demonstrate the dry circuit set up on device**

Can demonstrate this in practice and discuss the different parts of the circuit and what they do.

**Discuss and demonstrate the wet circuit set up on device**

Can demonstrate this in practice and discuss the different parts of the circuit and what they do.

**Discuss what a Circuit Calibration or Learn circuit is and when this should be performed (*if applicable*)**

Can demonstrate how this is done and discuss why and when it is needed e.g. different tubing, wet/dry circuit, adding in extra equipment such as Oxygen, and when troubleshooting alarms.

### Oxygen delivery

**Demonstrate how to attach Oxygen to the ventilator**

Can demonstrate how this is done and discuss what flow the machine can use, some machines require the Oxygen to be off when the machine is turned on.

**Discuss and demonstrate how to measure Oxygen delivery via the ventilator when required**

Can discuss how this can be done if not currently used on the machine/CYP.

### Nebulisation

**Demonstrate how to attach a nebuliser set to the ventilator using the device available at your Trust/ healthcare setting (*Aerogen, flow driven nebuliser*)**

Can demonstrate using the device used locally or by the patient, you may require device training on the Aerogen if not used by your trust currently. (This can be added to the equipment training table).

### Humidification

**Discuss and demonstrate how to attach humidifier correctly to the ventilator and add water appropriately**

Can demonstrate if CYP has humidity, if CYP does not have humidity discuss how this can be done on device if needed.

## Section 2: Equipment and Ventilator Specific Training Record

### Alarms *(if applicable)*

<b>Demonstrate where to check what alarm settings are set and discuss what they mean</b>	Can demonstrate where the alarm settings are on the ventilator, discuss what the alarms represent/ what you would be checking if each alarm was to sound.
<b>Demonstrate how to check the alarms are working and how often to do this</b>	Can demonstrate an obstruction and disconnection alarm (block tubing, wait for alarm to sound, let tubing leak, wait for alarm to sound) as you would for daily checks, if CYP is dependent and 2 <sup>nd</sup> ventilator not available discuss how you would do this e.g. hand ventilating CYP with appropriate support/ swap to spare ventilator
<b>Discuss how to troubleshoot alarms</b>	Can discuss where the alarm information can be found, manual, LTV hub QR code, Ventilator Training Alliance (VTA) app, information icon on ventilator as alarm is sounding, discuss importance of checking the CYP and carrying out an A-E assessment before checking the ventilator.
<b>Demonstrate how to mute/unmute the alarm and aware of the risks if the alarm was left muted</b>	Can demonstrate how to mute alarms and how to mute for longer periods if applicable, discuss if the ventilator unmutes when a new alarm is activated (some don't), discuss the risks to the patient if left muted: not recognising new alarms, current issue if not resolved; resulting in the CYP becoming unwell, ALWAYS check patient first, A-E assessment.

### Air inlet filters

<b>Demonstrate how to locate the air inlet filters on the ventilator</b>	Can demonstrate where the air inlet filter is and discuss what the filters do: some are bacterial, pollen etc.
<b>Demonstrate how to change/ clean the air inlet filter and can discuss maintenance of the filters according to manufacturers and LTV Centre guidance</b>	Can understand that some filters are disposable, some need cleaning with warm soapy water, check manufactures guide for guidance how often to change but discuss the importance of visual checks and the need for more regular cleaning and what environmental factors can cause more regular changing.

End of Equipment and Ventilator Specific Guidance