

# Endotracheal Ventilation for Neonatal Transfer.



Trust ref: C2/2024

## 1. Introduction and Who the Procedure Applies to

This guideline is aimed at all health care professionals involved in the care and transfer of infants within the CenTre neonatal transfer service.

(This guideline is not intended to instruct on modes of ventilation and how to utilize these as it is expected clinicians undertaking transport already have this knowledge.)

The objective of mechanical ventilation for transfer is to maintain a stable airway, appropriate ventilation and oxygenation for babies during transport. Many of our babies have both been intubated and ventilated before referral or following advice during the referral process and prior to the teams' arrival.

There should be a lower threshold for intubating and ventilating a baby for transfer between units if there is any concern regarding cardiorespiratory instability, apnoea's, or clinical deterioration.

### **Aim of the guideline;**

- Management of the baby that requires ventilation support for transfer.

### **Key points;**

- The aim of mechanical ventilation during transfer is to maintain a stable respiratory status.
- To provide a safe method of maintaining a secure airway during transfer when interventions are limited.
- Thresholds for invasive ventilation during transfer are lower than in a NNU due to limited scope for intervention during transfer.

### **Related UHL/NUH/CenTre documents;**

#### **Title**

Mechanical Ventilation in Neonates (NUH guideline)

[Optimisation of the Preterm Infant UHL Neonatal Guideline.pdf](#)

High frequency oscillatory ventilation in neonates (NUH guideline)

CenTre Equipment Guide SIMV

[CenTre Neonatal Transport Airway Management & Intubation UHL Guideline.pdf](#) Ref: C67/2024

[Non-Invasive Carbon Dioxide Monitoring During Neonatal Transport UHL Guideline.pdf](#) Ref: c66/2024

CenTre Equipment Guide HFOV

Gas usage table for CenTre transport.

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## **2. Standards and Procedures**

### **Management of the ventilated baby**

- Assessment of the baby is required to determine efficacy of the current ventilation.
- If the baby is stable and ventilation appropriate use similar settings/mode on the transport ventilator (Note: audits have shown tidal volume settings on the transport ventilator measure slightly lower than on unit ventilators so adding an additional 2mls can help; see below).

If settings cannot be replicated on transport ventilator changes should be made on the unit ventilator in the first instance.

- If the baby is not stable, ventilation strategy should be optimized on the unit ventilator.
- Blood gases should be checked following each ventilation change and transfer to the transport ventilator constitutes a change in ventilation.

### **Ventilation During Transfer**

- Where ventilation is initiated by the transport team volume guided ventilation should be considered.
- Babies should have transcutaneous CO<sub>2</sub> monitoring insitu for the duration of the transfer where skin integrity allows.
- Babies should have end-tidal CO<sub>2</sub> monitoring in situ (unless baby is being oscillated, as in this case it will not pick up).
- A blood gas should be checked following each ventilation change, prior to leaving the referring unit and on arrival at the receiving unit.
- Transport team should ensure there are adequate gases available on transport trolley and in ambulance to complete the transfer.

### **Deterioration of Ventilated Baby on Transfer**

- If there is deterioration of the baby during the transfer, request the ambulance driver to pull over in the nearest, safest place possible in the first instance.
- Check through **Dislodged Obstruction Pneumothorax Equipment (DOPE)** algorithm to trouble shoot in the first instance if the baby is deteriorating.
- If there continues to be concerns with the baby, call through to the transport consultant for advice (or request that one of the team do this) whilst assessing the baby.
- Any unplanned stops during the transfer should be recorded and monitored via Datix system.

### **Escalation from Conventional Ventilation**

- Consider High frequency oscillation ventilation, in this case discuss with transport consultant (and see NUH guideline).

### **Volume Guarantee on Transport Ventilator**

- When using volume guarantee on transport ventilator, it has been found that adding 2mls to the total tidal volume desired enables correct volumes to be reached more effectively.

**Table 1** - (Below) Shows the modes of ventilation with the variations of different names for these modes and their descriptions.

### **Invasive ventilation**

Transport ventilation mode	Definition	Other names	Starting/usual values
<b>IPPV</b>	Non-synchronised positive pressure ventilation	CMV	20-25/5 cmH <sub>2</sub> O, RR 30-60, iT 0.35-0.5s
<b>SIPPV</b>	Synchronised positive pressure ventilation (assists all breaths)	PC-AC or A/C (VN500, drager) Assist IPPV (Fabian) PC (servo-n) PTV (SLE) P-CMV (Hamilton)	20-25/5 cmH <sub>2</sub> O, RR 30-60, iT 0.35-0.5s
<b>SIMV</b>	Synchronised intermittent mandatory ventilation (assists only programmed breaths)		20-25/5 cmH <sub>2</sub> O, RR 30-60, iT 0.35-0.5s
<b>PSV</b>	Pressure support ventilation (patient regulated inspiratory and expiratory time)	PS (servo-n)	20-25/5 cmH <sub>2</sub> O, RR 30-60, iT patient triggered (max 1s)
<b>VG</b>	Volume guarantee (adds volume control to pressure modes)	PRVC (servo-n) TTV (SLE)	4-6 mL/kg Pmax 25-30 cmH <sub>2</sub> O
<b>HFO</b>	High frequency oscillation		MAP 12-20 Frequency 8-15 Hz Amplitude 20-50

### **Non-invasive ventilation**

Transport ventilation mode	Definition	Other names	Usual Values
<b>nCPAP</b>	nasal continuous airway pressure		4-8 cmH <sub>2</sub> O
<b>BIPAP (not available)</b>	double level CPAP	BiPhasic CPAP (Infantflow) DuoPAP (Fabian, Hamilton) nIPPV (Medin)	8-12/4-6 cmH <sub>2</sub> O Ti 0.5-1s

Transport ventilation mode	Definition	Other names	Usual Values
<b>nIPPV</b>	nasal intermittent positive ventilation	NIV (Hamilton, Servo-n)	20/5 cmH <sub>2</sub> O

Leoni	Drager	Servo-n	SLE	Fabian	Hamilton
<b>IPPV</b>	PC-CMV	-	IPPV	IPPV	CMV
<b>SIPPV</b>	PC-AC or A/C	PC	PTV	Assist IPPV or SIPPV	P-CMV
<b>SIMV</b>	SIMV	SIMV	SIMV	SIMV	SIMV
<b>PSV</b>	PSV	PS			
<b>VG</b>	VG	PRVC	TTV	VG	S-CMV
<b>HFO</b>	P-HFO	HFO	HFO	HFO	Not available

### **3. Education and Training**

None

### **4. Monitoring Compliance**

None

### **5. Supporting References**

[Optimisation of the Preterm Infant UHL Neonatal Guideline.pdf](#) Ref: C28/2024  
[CenTre Neonatal Transport Airway Management & Intubation UHL Guideline.pdf](#) Ref: C67/2024  
[Non-Invasive Carbon Dioxide Monitoring During Neonatal Transport UHL Guideline.pdf](#) Ref: c66/2024

### **6. Key Words**

**Airway, Apnoea's, CenTre, Invasive ventilation, Oxygenation, Respiratory**

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The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.

As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS			
Guideline Lead (Name and Title) Emma Blackbourn			Executive Lead Chief Nurse
Details of Changes made during review:			
Date	Issue Number	Reviewed By	Description Of Changes (If Any)
December 2024	1	CenTre Clinical Practice Group and CenTre Senior Team Group	New document