

HFNT Management Pathway

Template Standard Operating Procedure

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1. Objectives

The objectives of this pathway are to:

1. Support appropriate patient cohort identification
2. Standardise practice of initiation and weaning of HFNT
3. Provide safe delivery of HFNT

2. Key points

- Identify suitability for HFNT: Type 1 respiratory failure with $\text{PaCO}_2 < 6 \text{ kPa}$, respiratory rate ≥ 25 breaths/min, and SpO_2 below prescribed target despite an oxygen concentration $\geq 60\%$ or a non-rebreathe mask. For most patients, this corresponds to $\text{SpO}_2 < 94\%$; use $< 88\%$ in patients at risk of hypercapnic respiratory failure.
- Check exclusion criteria: Do not commence HFNT if exclusion criteria apply, including reduced conscious level, airway obstruction, acute severe asthma, cardiovascular instability, multiple organ failure or pneumothorax.
- Clinician initiating HFNT can modify the management including patient selection based on their clinical discretion.
- Commence in a designated area with trained staff, appropriate monitoring, and senior clinician involvement.
- Escalation planning: Document ceiling of care and discuss promptly with intensive care registrar or consultant. However, it is important that this does not delay the institution of HFNT.
- Monitor response: Review clinical status, arterial blood gases, respiratory rate, oxygenation and ROX index. Escalate urgently if deterioration or poor response occurs.

3. ROX Index

$$\text{ROX} = \frac{\text{SpO}_2}{\text{FiO}_2} \div \text{RR}$$

Evidence suggests that $\text{ROX} > 4.88$ predicts HFNT success in hypoxemic respiratory failure.

Example: SpO_2 94%, FiO_2 0.60, RR 28 $\rightarrow (94 \div 0.60) \div 28 = 5.6 \rightarrow$ Likely HFNT success

ROX Score	Risk Level	Required Action
>4.88	Likely success	Continue, maintain monitoring schedule
3.85–4.88	Intermediate risk	Enhanced monitoring; senior review within 1 hour; consider ICU call
<3.85	High risk of failure	IMMEDIATE senior review. ICU referral mandatory if within agreed ceiling of care. Do not delay.

ROX should be recalculated at locally agreed time points, for example at 2, 6 and 12 hours after HFNT initiation, and sooner if the patient deteriorates.

ROX may be used to support decision to de-escalate oxygen delivery, identify patients at risk of deterioration for prompt escalation. However, ROX must not replace clinical judgement, and escalation decisions should consider the full clinical picture.

4. HFNT commencement document

High Flow Nasal Therapy (HFNT) Commencement Form

Affix Patient Label here or record
 Name: _____
 NHS No: _____
 Hosp No: _____
 D.O.B. ____/____/____
 M____ F____

HFNT Initiation Page Type 1 respiratory failure

Clinical area / ward: _____
 Responsible consultant: _____

Diagnosis: _____

Patients with suspected cardiogenic pulmonary oedema should be managed according to local acute heart failure/non-invasive respiratory support pathways.

Previous ABGs (if known): FiO₂ _____ pO₂ _____ pCO₂ _____ HCO₃ _____

Prescribed SpO₂ target: _____

Checklist

Criteria	Yes	No	Comment
PaCO ₂ of less than 6 kPa	☐	☐	
SpO ₂ below the prescribed target despite oxygen concentration ≥60% or a non-rebreather mask	☐	☐	
Respiratory rate of 25 or above	☐	☐	
Contraindications to HFNT excluded?	☐	☐	
Decision made to escalate?	☐	☐	

CXR

Decision to commence HFNT made by: Consultant ☐ ST3+ ☐ IMT ☐ Other ☐

Name/grade: _____

Consent: Patient gave consent ☐ Patient unable to give consent ☐ Decision discussed with relative ☐

Details: _____

Plan if HFNT fails: Escalate to ICU/intubation ☐ Palliative/supportive management ☐

Details: _____

Discussed with: Respiratory ST3+/Consultant ☐ Critical Care Outreach ☐ ICU ☐ On-call Senior Clinician ☐

Name/time: _____

Resuscitation status: For resus / Not for resus

Date of resus decision: _____

DNAR form completed: Yes / No

Notes: _____

MRC Dyspnoea score (e.g. 2 weeks prior to admission): _____

Exercise tolerance in metres: _____

Notes: _____

1. Not troubled by breathlessness except on strenuous exercise
2. Short of breath when hurrying or walking up a slight hill
3. Walks slower than contemporaries on the level because of breathlessness, or has to stop for breath when walking at own pace
4. Stops for breath after about 100 m or after a few minutes on the level
5. Too breathless to leave the house, or breathless when dressing or undressing

Arterial Blood Gases

Stage	O ₂ flow or %	PaO ₂	PaCO ₂	pH	HCO ₃	BE	ROX index
Before HFNT							
1–2 hours HFNT							
Other gases							

Completed by:

Name: _____ Signature: _____

Date: _____ Time: _____

5. HFNT Observation Document

HFNT Documentation Form

Affix Patient Label here or record

Name: _____

NHS No: _____

Hosp No: _____

D.O.B. ____/____/____

M / F / Other

SpO₂ target: _____

Date: _____

- Nurse patient in an upright position
- Ensure nasal cannula is well sited and tolerated by patient
- Allow patient to eat/drink as normal if stable or improving
- HFNT settings should be adjusted only by healthcare professional with appropriate training

Time	Respiratory Rate	Sats %	Gas Flow L/min	O ₂ Conc.	Water Temp	Water Volume	ABG Results (if taken)			Setting Changes	Nostril & ear pressure areas	GCS	Sign
							pH	PaO ₂	pCO ₂				
00:00													
01:00													
02:00													
03:00													
04:00													

Add rows as appropriate

6. Using HFNT

6.1 Suggested Starting Parameters

Suggested starting parameters:

- Flow: 40–50 L/min
- Oxygen concentration: titrate to prescribed SpO₂ target (usually 94–98%, or 88–92% in patients at risk of hypercapnic respiratory failure)
- Humidification Temperature: 34–37°C

Titrate oxygen concentration and flow rate to maintain sats target. Increase flow rate to reduce dilution of inspired oxygen, improve consistency in oxygen delivery and to benefit from marginal PEEP effects.

6.2 Monitoring

Complete the HFNT observation document every hour.

6.3 Weaning Strategy

Weaning may begin when the underlying condition is improving, SpO₂ is within the prescribed target range, respiratory rate is <25 breaths/min, work of breathing is reduced, and the patient is haemodynamically stable. Imaging is not required solely to commence weaning but may support clinical decision-making.

Stepwise approach:

- Reduce oxygen concentration by 5–10% every 30 minutes while maintaining SpO₂ within the prescribed target range.
- Once the oxygen concentration is ≤40%, reduce flow by 5 L/min every 30 minutes.
- If SpO₂ falls below the prescribed target or the patient deteriorates, return to the previous tolerated setting and reassess. Seek senior review if deterioration persists or repeated weaning attempts fail.
- When clinically stable for at least 1 hour with oxygen concentration ≤40% and flow ≤30 L/min, transition to conventional oxygen therapy and continue monitoring.

See flowchart in Section 7.

6.4 Escalation Criteria

- There is no consensus regarding the specific threshold of physiological variables that trigger intubation and the decision is ultimately based on clinical judgement at the bedside.
- Ongoing HFNT at >50L/min and oxygen concentration >50% requirements to meet SpO₂ / ROX targets would need medical review to either increase flow/FiO₂ or consider reintubation/NIV.
- Consider “Nil by Mouth” order with alternative nutritional or fluid intake plan in anticipation of intubation if appropriate.

7. HFNT management flowchart

