Worcestershire Acute Hospitals NHS Trust

GUIDELINE FOR THE PRESCRIBING, MONITORING AND ADMINISTRATION OF OXYGEN IN ADULTS

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

The guideline covers prescribing; monitoring and administration of oxygen for all adult inpatients cared for in general ward areas (refer to page 5 for exclusions).

This guideline is for use by the following staff groups :

All qualified health care professionals involved with the prescribing, monitoring and administration of oxygen for adult inpatients cared for in general ward areas (refer to page 5 for exclusions). Training will be provided via ESR and supported by the local respiratory team if needed.

Lead Clinician(s)

Jane Newport	Respiratory Lead Practitioner
Clare Hooper/ Jamie Johnstone	Respiratory Clinical Lead
Approved by Medicines Safety Committee on:	14th October 2026
Approved by Respiratory Directorate on:	
Review Date:	1st July 2026
This is the most current document and is to be used until a revised version is available:	1st July 2029

Key amendments to this guideline

Date	Amendment	Approved by:
June 04	Guideline approved by Clinical Effective Committee	
November 09	Guideline reviewed by Clinical leads with major amendments made – change of document name	Medicines Safety Committee
6th March 2013	Guideline extended to enable Sarah Austin to review and acquire approval	Sarah Austin
12th June 2013	Reviewed. National Guidelines unchanged.	Sarah Austin
14th January 2014	Major review. National Guidelines unchanged, but local audit identified significant problems with oxygen administration: • Policy reduced in size to encourage people to read it. • Hyperlinks to source document used to reduce size of appendices • Local problems with oxygen/air administration specifically identified and addressed • Examples of how to prescribe oxygen included	Medicines Safety Committee
31st March 2016	Document extended for 12 months as per TMC paper approved on 22nd July 2015	TMC
31st July 2018	Comprehensive review of document based on latest BTS guideline. Addition of section on assessment of oxygen for discharge. Addition of NEWS 2 as the patient assessment and monitoring tool Up-date on fire safety Up-date on oxygen “house keeping” including carriage and storage of cylinders New guidelines on use of Air Ports to avoid accidental delivery of air instead of oxygen	Respiratory Committee Medical Gas Committee
2nd September 2019	Final version V4.2 with above changes	Medicines Safety Committee
9th October 2019	Presented at CCG – surgical view that the policy is unachievable – to go back to respiratory department for changes Further comments from other departments to go to Sarah Austin	Central Governance Group
13th November 2019	Agreement that surgical section can be added under advice from anaesthetics	Respiratory Directorate Meeting
26th November 2019	Agreement that there is no requirement for routine ABG when oxygen used during patients’ stay in theatre. No comment regarding oxygen management on surgical ward	Discussion Dr E Mitchell
29th April 2021	New Trustwide oxygen training package via ESR- covering relevant NPSA and local actions from Sis. Addition of need for driving gas prescription for nebulisers	Jane Newport

28th June 2021	Changes to Nebuliser and air section 10b and section 13 and need to use compressor box rather than air dials due to NPSA.	Mike Hallissey
6th July 2021	Document approved for three years	Clinical Governance Group
8th March 2023	Changes to policy following incident with oxygen in bathroom on ward areas- new sections added Addition of section regarding patients on established home oxygen and use of cylinders in wards. Changes to Palliative oxygen prescription Changes to respiratory HCA and PTA oxygen handling, additional competencies	Jane Newport/ Claire Hooper
12th July 2023	Approved at MSC- amendment to be made when Discretionary Medicine Policy as will replace the Emergency Oxygen PGD.	Medicines Safety Committee
January 2025	Minor change to section 8 wording – qualified nurses should follow Emergency and Discretionary Medicines Policy	Jane Newport/Medicines Safety Commitee
October 2025	Amendments to oxygen weaning section linked to ISAG action needed.	Directorate Meeting
June 2026	Changes to prescribing and monitoring using sunrise EPMA Whole document layout reviewed and changed to version 7.0	

Worcestershire Acute Hospitals NHS Trust

GUIDELINE FOR THE PRESCRIBING, MONITORING AND ADMINISTRATION OF OXYGEN IN ADULTS

Introduction

The administration of supplemental oxygen is an essential element of clinical management for a wide range of clinical conditions; however oxygen is a drug and therefore requires prescribing in all but emergency situations. Failure to administer oxygen appropriately can result in serious harm to the patient.

Contents

1) Aim
2) Appropriate target oxygen saturations
3) Prescribing oxygen
4) Administering oxygen
  a. Oxygen Cylinders
5) Monitoring oxygen
6) Discontinuing Oxygen Use
7) Exclusions and exceptions
  a. Emergency situations
  b. Specialist areas
  c. End of Life Care
  d. Specific situations: Carbon monoxide poisoning and pneumothorax
8) Contra indications
9) Cautions
  a. Fire
  b. Accidental delivery of air instead of oxygen
  c. Oxygen and carbon dioxide retention
  d. Contaminated oxygen cylinders
10) Transfer and transportation of patients receiving oxygen therapy
11) Use of oxygen therapy in toilets/ bathrooms
12) Home oxygen patients and use of oxygen cylinders in hospital
13) Peri-operatively and immediately post operatively
14) Nebulised therapy and oxygen
15) Humidification
16) Oxygen for discharge
17) Implementation
18) Monitoring Tool
19) References
20) Contribution List
Appendix 1 **Glossary**
Appendix 2 **Flowchart for oxygen therapy**
Appendix 3 **Appropriate Mask Selection**
Appendix 4 **Administration of Oxygen therapy**
Appendix 5 **Oxygen Cylinder Setup**
Appendix 6 **Oxygen CD Cylinder Data**
Appendix 7 **Monitoring oxygen therapy**
Appendix 8 **Oxygen saturations above target range**
Appendix 9 **Oxygen saturations below target range**
Appendix 10 **Enhanced Oxygen Competencies for PTA and Respiratory HCA**
Appendix 11 **Oxygen in bathroom flowchart**
Appendix 12 **Flow diagram for referral for oxygen for discharge**

Supporting Documents

Supporting Document 1 Equality Impact Assessment
Supporting Document 2 Financial Risk Assessment

1) Aim

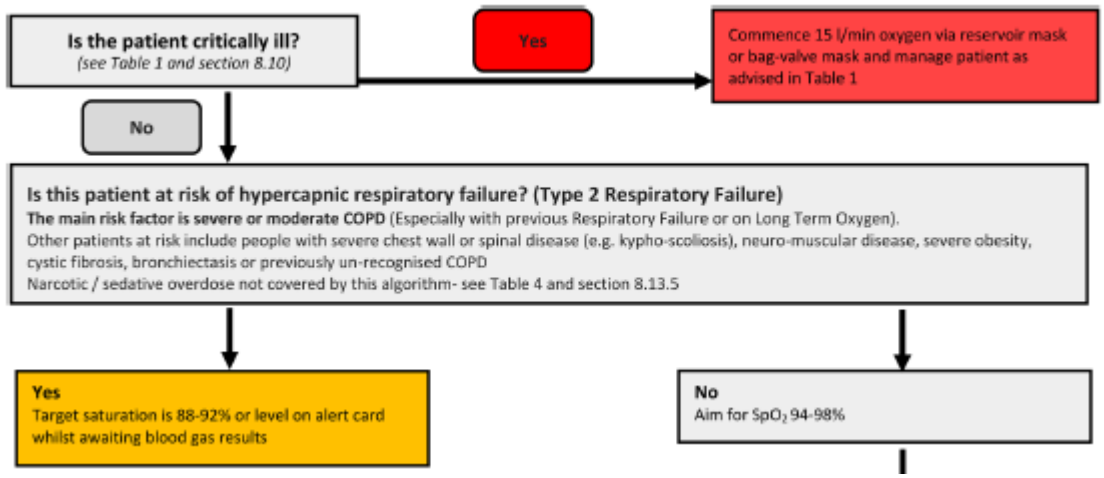
The aim of this policy is to ensure that:

- All patiets who require supplementary oxygen therapy receive therapy that is appropriate to their clinical condition and in line with the national British thoracic Socoety guidance (June 2017)
- Oxygen should be prescribed according to a target saturation range. This system aims to achieve a specified outcome, rather than specifying the oxygen dose and delivery method alone.
- Those who administer oxygen therapy must monitor the patient and keep within the target saturation range.

2) Appropriate Target Oxygen Saturations

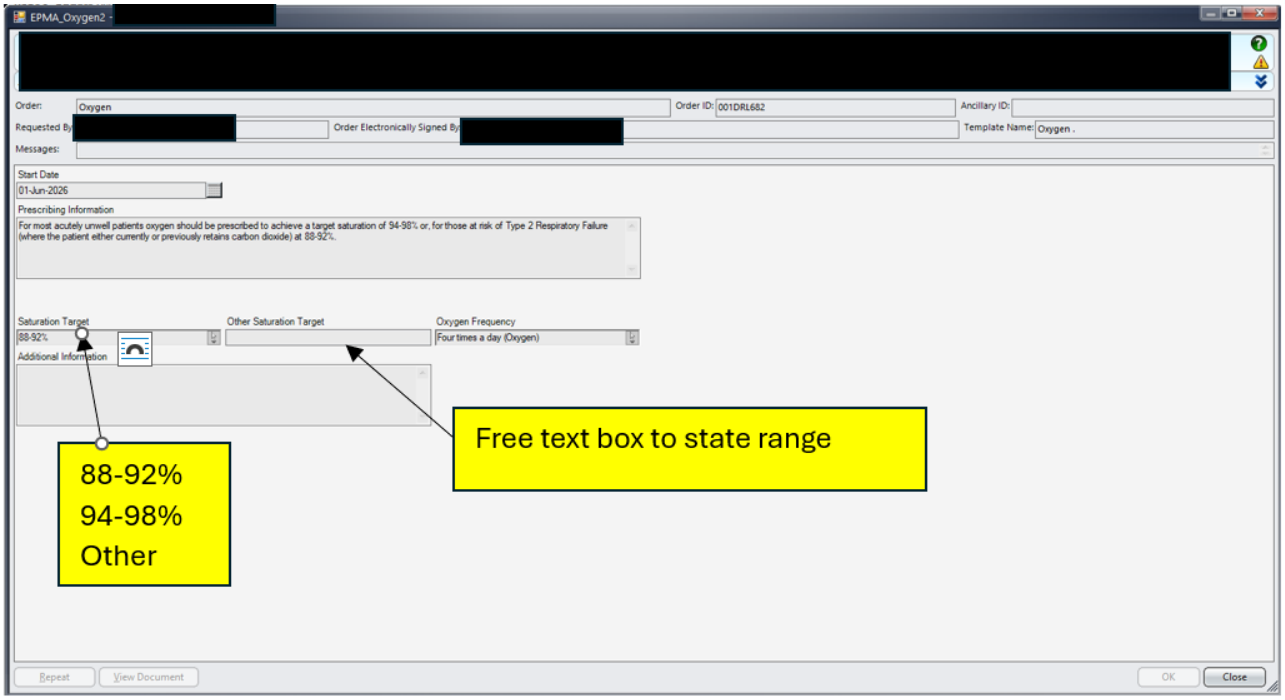
Oxygen should be prescribed to achieve a target saturation of
94-98% for acutely unwell patients,
or **88-92% for patients at risk of hypercapnic respiratory failure**.

For further information please refer to "BTS Guideline for Oxygen Use in Adults in Healthcare and Emergency Settings" (Thorax Vol 72, Supplement 1, Jun 2017)



3) Prescribing oxygen

Oxygen is classified as a drug and need a prescription. All patients requiring oxygen therapy should have a target situation established and documented on sunrise EPMA.
Oxygen must be prescribed in the designated section stating the appropriate target saturation (except in emergency situations)



4) Administering Oxygen

Once the target saturation has been identified and prescribed, the most appropriate delivery system should be used following the oxygen flow chart (appendix 2), device selection (appendix 3) and guide (appendix 4)

Unless it is an emergency situation, oxygen must be administered by qualified and appropriately trained health care staff, i.e. doctor, RN, RM, RSCN or physiotherapist in accordance with the Trust's Medicines Policy

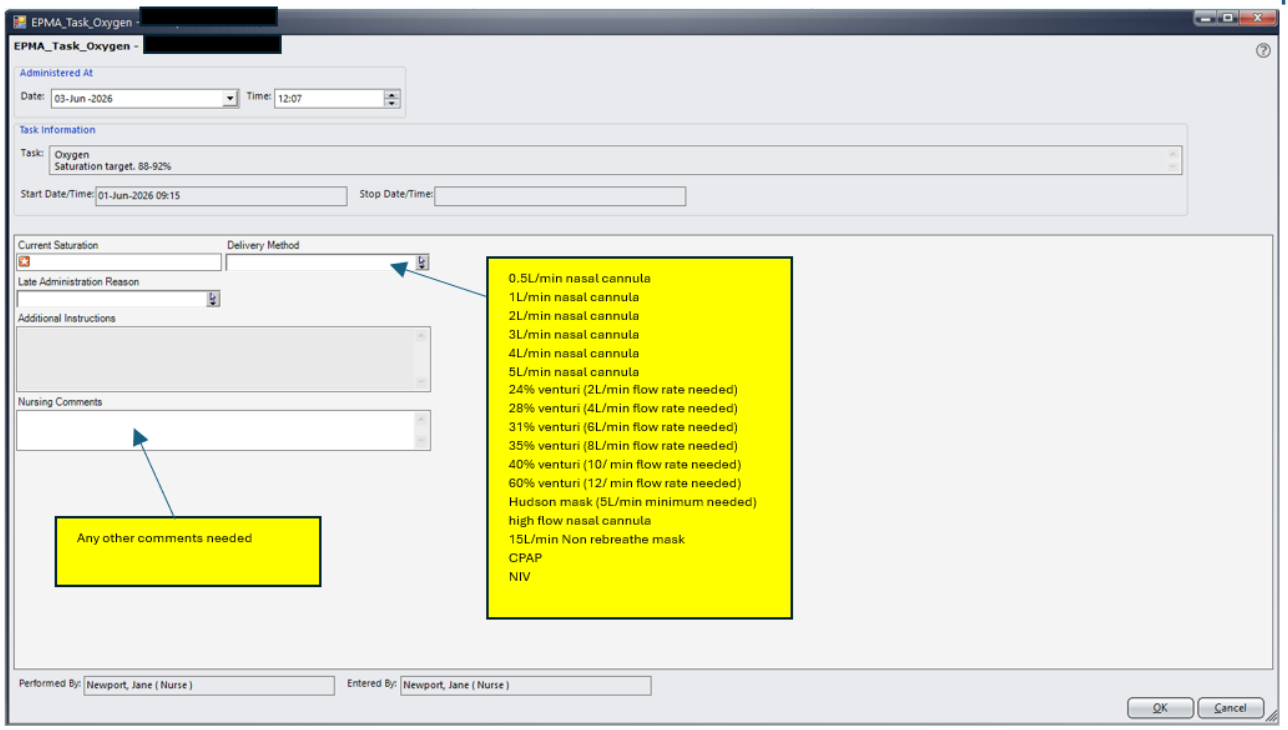
When administering, staff should assess if the device is still appropriate and not damaged. If damaged this should be changed.

a) Oxygen Cylinder Use

It is essential to set up cylinder correctly (appendix 5) and check the oxygen levels in cylinder at regular intervals. Appendix 6 gives approximate times for flow rates in CD size cylinders.

5) Monitoring and Weaning Oxygen

The patients target saturation and oxygen delivery system must be recorded on EPMA alongside other mandatory observations (respiratory rate, Heart rate, blood pressure, temperature, ACVPU) and NEWS at least 4 times a day as a minimum. This is set as 8am, 12pm, 6pm and 10pm.



Patient should be monitored as specified in appendix 7.

Any abnormality or sudden change in oxygen saturation must result in an increased frequency of observation.

Oxygen therapy must be increased if the saturation is below the desired range and decreased if the saturation is above the desired range (and eventually discontinued as the patient recovers) (appendix 8)

Any sudden fall in oxygen saturation (by 3% or more) must lead to clinical assessment and should lead to clinical evaluation of the patients, and in most cases a measurement of blood gases and an increase in oxygen therapy (appendix 9).
A score of 3 on one parameter should automatically trigger a call to ward based doctor for patient review.

6) Discontinuing Oxygen Use

Once weaned off oxygen, saturations should be taken at 1 hour to ensure within target saturation range prescribed. Patients should not be discharged home before they have been on room air for at least 4 hours.

Saturations should be checked when mobilising on ward to ensure remain within target. For most patients a distance to bathroom would be adequate. For those patients with mobility impairment an alternative distance may be used.
If desaturation noted, monitor recovery to baseline and recovery time. If significant desaturation observation or prolonged recovery time contact Respiratory nurses at WRH or Alex for advice.

7) Exclusions and Exceptions

a) Emergency situations

In emergency situations an oxygen prescription is not required:

All patients who have had a cardiac or respiratory arrest should have the maximum possible oxygen dose provided along with basic/advanced life support.

All peri-arrest and critically ill patients should be given oxygen at 15 l/m via a reservoir mask (delivering approximately 80% oxygen) whilst awaiting immediate medical review.
Once the patient is spontaneously breathing with a spontaneous circulation and a reliable saturation reading, the oxygen dose should be adjusted according to the target saturations for the patient. Patients with COPD and other risk factors for hypercapnia who develop critical illness should have the same initial target saturations as other critically ill patients pending the results of urgent blood gas analysis. These patients may need controlled oxygen therapy or supported ventilation if there is severe hypoxaemia and/or hypercapnia with respiratory acidosis

Any qualified nurse/ health professional can commence oxygen therapy in an emergency situation. Qualified nurses should follow the Emergency and Discretionary Medicines Policy and refer to Policy on the recognition and management of the deteriorating patient

A subsequent written record must be made of what oxygen therapy has been given to every patient alongside the recording of all other emergency treatment.

b) Specialist Areas

This policy is for use in all wards and departments treating adult in-patients, with the exception of patients who require invasive ventilation, e.g. in Intensive or Critical Care, or in theatres.

Where the medical team in charge of the patient feel that the principles of this policy do not apply, the clinical reason for the deviation must be clearly documented in the patient's notes.

c) End of life care

For patients receiving end of life care, oxygen is only usually indicated for patients whose saturation levels run below 90% on air, or for those whose breathlessness is not managed by fan therapy, anxiolytics or opiate medication. Saturation monitoring is rarely appropriate for patients receiving oxygen as part of their end of life management (in which case, the prescriber documents 'target saturations not indicated' on the drug chart and inpatient case notes).

d) Specific clinical situations

Carbon monoxide poisoning: this affects pulse oximetry readings, rendering them inaccurate. Oxygen should be given on the basis of capillary or arterial blood gas analysis. The oxygen device and flow rate must be prescribed on the drugs chart.

Pneumothorax: oxygen may increase the rate of resolution of pneumothorax in patients for whom a chest drain is not indicated. The oxygen device and flow rate must be prescribed on the drugs chart.

8) Contra-Indications

There are no absolute contraindications to oxygen therapy if indications are judged to be present. Supplemental oxygen should be administered with caution in patients suffering from paraquat poisoning, and with acid inhalation or previous bleomycin lung injury. The goal of oxygen therapy here is to achieve adequate tissue oxygenation using the lowest possible F_iO_2.

9) Cautions

a) Fire hazard

Oxygen is part of the "fire triangle". Oxygen equipment must not be allowed to come into contact with flames or sparks and all connections must be clean and free of any grease or oil. Do not hand cream and ensure that alcohol hand gel has fully evaporated prior to adjusting oxygen cylinders or oxygen flow meters.

Oxygen interacts with oil and can cause chemical burns if creams and ointments are used in the nose or on the face. Do not use Vaseline or other high oil based products for patients using oxygen. Where creams are clinically required for patients, liaise with pharmacy regarding the treatment option with the lowest possible oil content. Remember that shampoo, hair conditioner and make up can contain oil.

Oxygen cylinders and flow meters must be switched off when not in use.

Be aware that leaving oxygen masks or nasal specs with active oxygen flow going through them in contact with beds or chairs rather than with a patient, increases the flammability of the furniture.



Oxygen cylinders in wards and departments must be stored in Trust approved mobile oxygen storage cages, which can be wheeled to a place of safety (i.e. behind a fire door or ideally out of the ward) in case of fire.

In the case of confirmed fire on the ward, the nurse in charge must assess whether or not the flames are affecting a bed head. If they are then the departmental oxygen supply must be shut off immediately by ward staff. The departmental oxygen control valve is usually sited at the ward entrance and is a glass fronted white box. Break the glass and turn the valve to shut off the oxygen. Staff should then evacuate all occupants of the ward to safety, re-establishing portable oxygen supplies to patients at the earliest opportunity dictated by their clinical need.

The Trust's Advanced Life Support policy is designed to minimise the risk of fire during emergency procedures, and staff are up-dated on this at their yearly mandatory training.

Patients who are having supplementary oxygen and who chose to leave the ward areas to go outside to smoke a cigarette must not use oxygen while they smoke as it infuses their clothes making them highly flammable.

b) Accidental delivery of air instead of oxygen

Some ward areas have piped air available as well as piped oxygen.



Air dials and flow meters must not be used on wards. Compressor boxes should be used if air is needed to drive nebulisers.

All air terminal units must have a blanking plate insitu.

c) Oxygen administration and carbon dioxide retention

In patients with chronic carbon dioxide retention, incorrect oxygen administration has the potential to cause further increases in carbon dioxide and respiratory acidosis, (type 2 respiratory failure). This may occur in patients with COPD, neuromuscular disorders, morbid obesity or musculoskeletal disorders.

For patients who have current or previously documented Type 2 Respiratory Failure (T2RF), oxygen should be prescribed in the lower saturation rate (88 – 92%). Patients without current or previous CO2 retention, but who are at risk of Type 2 Respiratory Failure (T2RF) should have blood gas analysis to check their carbon dioxide levels and pH prior to starting oxygen therapy at the standard prescription (94 – 98%). They must have blood gas analysis repeated an hour after starting treatment. Where T2RF is confirmed, oxygen should be re-prescribed in the lower saturation range.

d) Contaminated oxygen cylinders

As with all other hospital equipment, oxygen cylinders and oxygen flow meters need to be kept clean in accordance with the Trust's Cleaning Responsibility Framework (section 5a).

If an oxygen cylinder becomes contaminated with body fluids, please contact ISS helpdeak, who will provide the appropriate bag to isolate the cylinder, prior to its return to BOC for cleaning.

10) Transfer and Transportation of Patients Receiving Oxygen

Patients requiring oxygen while being transferred from one area to another must have clear documentation of their ongoing oxygen dose and documentation of their oxygen saturation. Staff must ensure that adequate oxygen is provided during transfers and whilst patients are in diagnostic departments.
Patients who are medically unstable and those requiring high dose oxygen therapy (reservoir mask, venturi mask above 35% or humidified oxygen above 35% or nasal or simple mask above 5L/min) should be accompanied and have saturations monitored continuously by registered healthcare professionals.
Staff must ensure there are adequate numbers of oxygen cylinders for transfer when they leave department/ward.



Where oxygen cylinders are required for patient transfer between wards and departments, the cylinder must be carried in a Trust approved cage, attached to the wheelchair or bed.

The oxygen supply should be reconnected to the wall supply as soon as possible once transfer is complete; this should be completed by registered member of staff. Exception to this is therapy support workers and respiratory ward HCAs who have completed enhanced training and competencies – appendix 10

11) Use of Oxygen therapy within Toilets/ Bathrooms

Any patient who is on ≥40% oxygen via a venturi mask OR ≥8L via wide bore nasal specs should not be taken to the bathroom, all hygiene needs to be met at bedside whilst connected to piped wall oxygen.

Patients on 28%-35% venturi masks OR 4LO2 via nasal specs who are on a downward wean can go to the bathroom with continuous supervision once there to ensure clinical safety of patient and supply of oxygen is adequate.

If patients refuse to use commode at bedside/ wash at bedside and on more than 40% O2 then the nurse needs to perform a mental capacity assessment to ascertain that the patient understands the risks of mobilising on such large amounts of oxygen has a risk of death. This should then be documented fully in the patient notes. The patient should then be fully supervised for duration of time in bathroom and back up cylinders readily available in the bathroom.

A simplified flow chart is in Appendix 11.

Oxygen cylinders on the ward are usually the CD size. Appendix 6 indicates the approximate time indicated by the dial. The time is variable based upon the flow rate being delivered. Cylinders should not be used with less than ¼ dial showing.

12) Home oxygen patients and Use of oxygen cylinders whilst in hospital

If patients are normally on ambulatory oxygen therapy (AOT) they can manage their own oxygen **IF** they are on no more than 1L/min more than their normal prescription dose.

A new cylinder should be used at the start of each day. The cylinder should be checked every 3 hours AND at every drug round to ensure enough supply within cylinder. The cylinder should be changed once ¾ empty.

13) Peri-Operative and Post Operatively

The usual departmental procedure for prescribing oxygen therapy in endoscopy and theatres should be adhered to during the procedure and during the immediate recovery phase, with the supervising clinician taking responsibility.

If post-operative oxygen therapy is to be continued after transfer to the wards, it should be prescribed using the target saturation scheme outlined in this guideline.

14) Nebulised Therapy and Oxygen

In accordance with the Trust's medicines policy, patient's requiring nebulised medication must have both the drug and the driving gas for the nebuliser prescribed.

Usually this prescription should indicate that patients at risk of type 2 respiratory failure (e.g COPD) should have their nebuliser driven by a compressor box, while those with type 1 failure (e.g. asthma, COVID pneumonia) should have oxygen as their driving gas.

Patients must not be allowed to become hypoxic during nebulisation and, where necessary, supplementary oxygen should be given concurrently by nasal prongs to maintain their oxygen saturation within their specified target range.

All patients requiring 35% or greater oxygen therapy should have their nebuliser therapy by oxygen at a flow rate of >6 litres/minute.

For full details regarding nebulisers please refer to Clinical Policy for Use of Nebulisers

15) Humidification

Humidification may be required for some patient groups, especially for those with a tracheostomy and for those with hypersecretory lung disease.

Where humidifiers are used there is a risk that the water/saline used may become contaminated with bacteria. Consequently, only closed systems should be used.

Humidification equipment and circuits should be replaced every 48 hours. Care must be taken to remove any condensate from humidification tubing which can also be an infection risk.

16) Oxygen for Discharge

For most patients, once the cause of their hypoxaemia has been identified and treated, their need for supplementary oxygen will resolve. Oxygen should only be considered for discharge in patients who are nonsmokers/ ex-smokers and where:

1. The patient is already on home oxygen. Ward teams should ensure patients are back at the correct home prescription prior to discharge. If unsure contact RNS teams.

2. The patient is being discharged for end of life palliative care, with a SpO2 of less than 90% on air. Under these circumstances, the palliative care team can arrange for the patient's oxygen to be installed if prescribed amount is less than 2L/min. Oxygen assessment via blood gas analysis is not usually necessary. Larger oxygen needs or underlying lung diseases should be referred to RNS team

3. The cause of hypoxia is known, has been fully treated with maximal medical treatment, is of a chronic nature unlikely to resolve AND

    a. Arterial blood gases demonstrate that the patient's PaO2 is less than 7.3Kpa AND
    b. Any hypercapnia is fully managed with input from the respiratory medical teams if needed AND
    c. A full risk assessment, including the patient's smoking habits, the smoking habits of other household members, open fires, use of candles, falls risk, any mental health concerns including the use of alcohol or recreational drugs, is documented.

Unless the patient falls under the remit of the palliative care teams, patients being considered for discharge oxygen must be referred to the Respiratory Nurse Specialist (RNS) Teams for formal oxygen assessment, (Appendix 12).. Assessment and oxygen installation takes a minimum of 5 ½

hours. Ideally, the RNS teams need a working days' notice of patients needing discharge oxygen. Full details are in separate guideline "Guideline for prescription of oxygen for discharge".

17)Implementation

All healthcare professionals involved in prescribing, administering and monitoring of oxygen must familiarise themselves with the contents of this policy including the appendices.
All staff should complete the training module on ESR.
Should staff feel further training is required they should contact the respiratory nurse specialists.

18) Monitoring Tool

The trust hospital will participate in the national oxygen audits organised by the BTS. This should include audit if the prescription chart and observation chart against the standards set below.

This audit falls within the remit of the Medicine and Emergency Care Group– Department of Respiratory Medicine

STANDARDS	%	Clinical Exceptions
Oxygen is prescribed on the inpatient oxygen prescription for all patients receiving oxygen therapy.	90%	
Oxygen administration is recorded on the inpatient oxygen prescription for all patients receiving oxygen therapy	90%	
Oxygen saturation and oxygen dose are recorded on the observation chart.	90%	
Discharge ABG completed on prescribed dose of oxygen	90%	EOL patients will be excluded.
Completed HOOF uploaded to CLIP	90%	

19) References

- British Thoracic Society Emergency Oxygen Guideline Development Group. **BTS Guideline for Oxygen Use in Adults in Healthcare and Emergency Settings** Thorax 2017; 72: Supplement 1: Pages i1 – i90.

- British Thoracic Society Home Oxygen Guideline Group **BTS Guidelines for Home Oxygen Use in Adults** Thorax 2015; 70: Supplement 1: i1 – i52

- NPSA Rapid Response Report. Oxygen safety in hospitals. September 2009.

20) Contribution List

Key individuals involved in developing the current document 2026

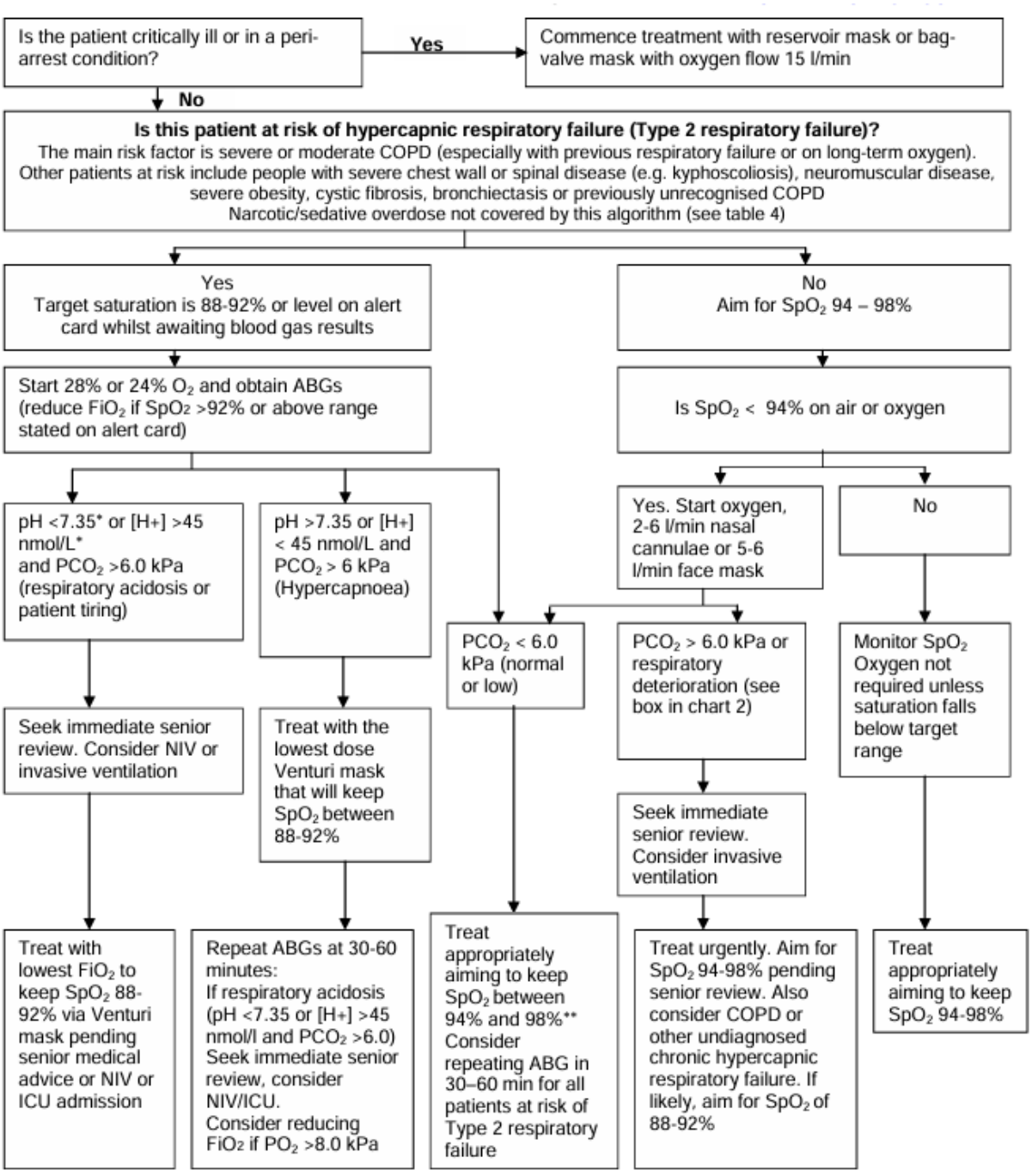
Designation
Lead Practitioner Respiratory
Respiratory Consultants WRH
Respiratory Consultants ALX
Respiratory Nurse Specialists

Appendix 1 Glossary

Glossary

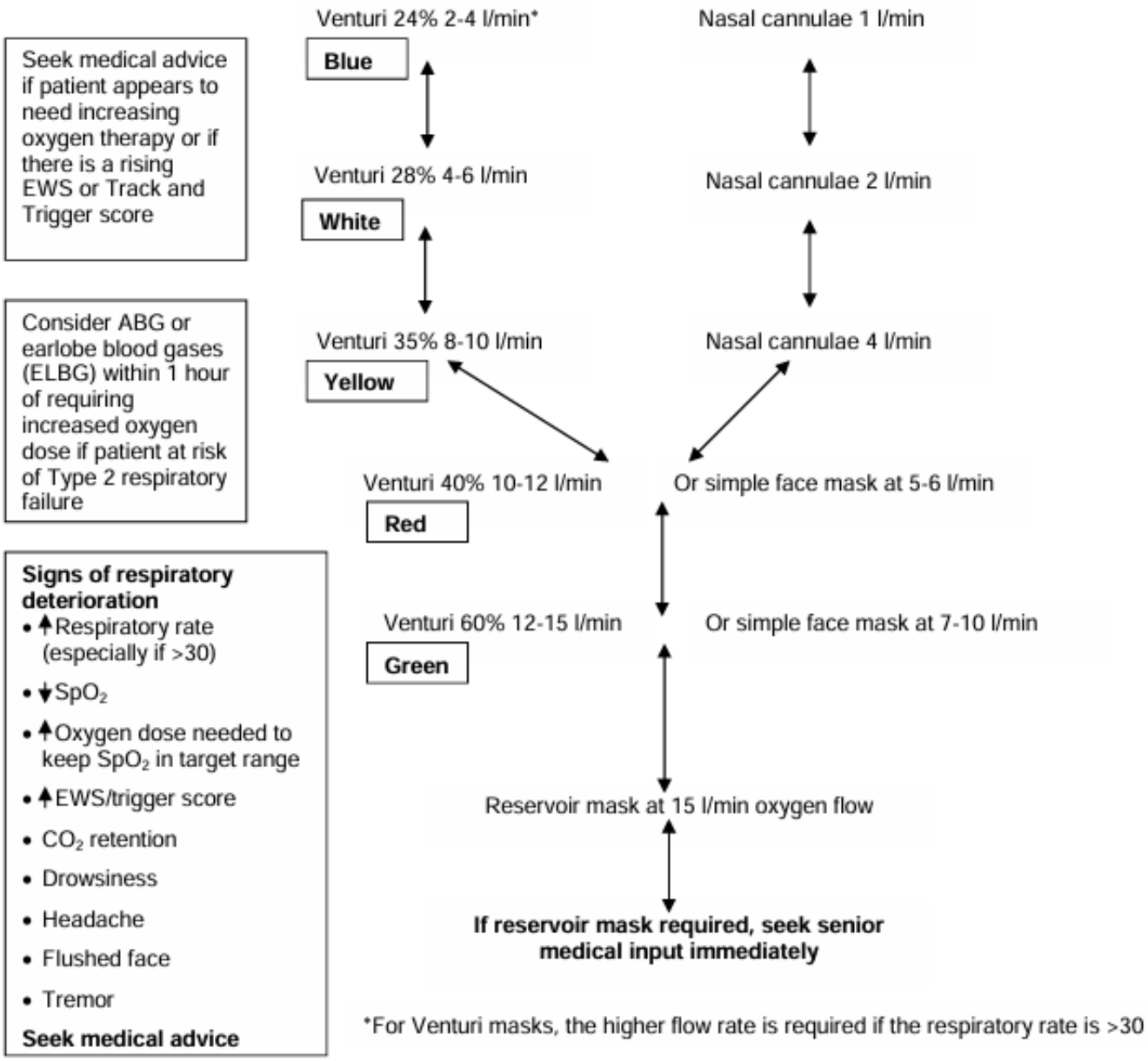
Hypercapnia	Carbon dioxide levels in the blood are higher than the normal range (Usually over 6.1 kpa)
Hypoxaemia	Abnormally low oxygen levels in the blood (usually said to be an arterial oxygen tension less than 8 kpa)
Hypoxia	Abnormally low oxygen levels in the tissues
P_aO_2	The amount of oxygen in the blood, obtained by arterial blood gas analysis. The unit of measurement is in kilopascals (kpa).
P_aCO_2	The amount of carbon dioxide in the blood, obtained by arterial blood gas analysis. The unit of measurement is in kpa
S_pO_2	Peripheral oxygen saturations, obtained by pulse oximetry
Type I Respiratory Failure	Low oxygen (less than 8 kpa) with a normal or low carbon dioxide level. People with type I respiratory failure can usually tolerate oxygen well.
Type 2 Respiratory Failure	Normal or low oxygen with a high carbon dioxide level (above 6.1 kpa). People with type 2 respiratory failure are often at risk of worsening problems unless they are given controlled doses of oxygen.
Ambulatory Oxygen Therapy (AOT)	Oxygen used only when someone is mobilising or exercising to prevent hypoxia on moving
Long term Oxygen Therapy (LTOT)	Oxygen used for at least 15 hours a day including overnight in patients with chronic hypoxia. Aims to improve oxygen delivery to vital organs such as heart and brain

Appendix 2- Flowchart for Oxygen Prescription and Initiation



Any increase in FiO_2 must be followed by repeat ABGs in 1 hour (or sooner if conscious level deteriorates) in patients at risk of Type 2 respiratory failure.
*If pH is <7.35 ([H+] >45nmol/l) with normal or low $PaCO_2$, investigate and treat for metabolic acidosis and keep SpO_2 94 - 98%.
**Patients previously requiring NIV or IPPV should have a target range of 88-92%, even if the initial $PaCO_2$ is normal.

Appendix 3 Appropriate Delivery Device selection aid/ Escalation of Oxygen



Patients in a peri-arrest situation and critically ill patients should be given maximal oxygen therapy via reservoir mask or bag-valve mask whilst immediate medical help is arriving (except for patients with COPD with known oxygen sensitivity recorded in patient's health record and drug chart, or in the EPR: keep saturation at 88-92% for this subgroup of patients)

DEVICE	DESCRIPTION
Oxygen Flow Meter 	In this Trust, this device is used to delivering oxygen from a wall mounted oxygen port. This style of device must never be used for delivering air from a wall mounted air port. The oxygen flow is adjusted by switching on the oxygen using the white and dial, and reading the oxygen dose being delivered using the graduated markings on the side of the device. The graduated markings should be read against the middle of the floating ball. A low flow oxygen meter must be used for oxygen flow rates less than 1 l/min
Nasal Cannulae 	Nasal cannulae consist of pair of tubes about 2cm long, each projecting into the nostril and stemming from a tube which passes over the ears and under the chin, to hold it in place. Usually used to deliver oxygen flows of 4 l/min or less. One cannot predict the percentage oxygen (F_IO_2) delivered via nasal cannulae. This is not important if the patient is in the correct target oxygen saturation range. Often more comfortable than a mask and they allow the patient to eat, drink and cough easily Overlong nasal specs can be uncomfortable, and may cause pressure or friction. The ends of the nasal specs can be trimmed if they are too long. Check for pressure sore development behind the ears.
Medium Concentration Mask 	A simple mask with an elastic strap that goes behind the patient's head, to hold the mask in place. Used to deliver oxygen at 5 – 10 l/min. One cannot predict the percentage oxygen (F_IO_2) delivered via this mask and it is not appropriate for use with patients in Type 2 Respiratory Failure Adjust the tension of the elastic strap to ensure a good fit. Remove mask and swap to nasal specs when eating. Mask will require regular cleaning if the patient has a productive cough.

Non-rebreathe Mask 	This mask has an oxygen reservoir bag that increases the amount of oxygen available for the patient to breathe. It is used in an emergency situation where the patient has suddenly deteriorated (but is still breathing). Use a flow rate of 15 l/min oxygen or more. The mask must fit tightly for it to work properly. The reservoir bag should deflate by about a third when the patient breathes in. If there is no movement of the reservoir bag then adjust the mask fitting. In some circumstances, the health care professional may need to hold the mask in position when it is first being used, to ensure a good fit. This mask is not licenced for on-going use, and must be specifically prescribed if it is being used outside of an emergency situation.
Venturi Mask  	This mask is the only one where the F_iO_2 can be regulated. It is appropriate for use where the patient is in type 2 respiratory failure. Different attachments can be fitted to the mask to deliver controlled oxygen. Oxygen attachments can deliver either: 24% (blue) 28% (white) 31% (orange) 35% (yellow) 40% (red) 60% (green) The oxygen flow rate needed for each of these options is embossed on each attachment. This type of oxygen delivery system needs to be prescribed in free hand on the Trust's medicines chart. Titration involves change of coloured valve and not just flow rate.

Appendix 4 Administration of oxygen therapy

ACTION	RATIONALE
Ensure patency of airway	To promote effective oxygenation
Assess the patient and use the most appropriate oxygen delivery system, (see appendix 3).	The type of delivery system used will depend on the needs and comfort the patient.
Ensure the oxygen is prescribed on EPMA. The prescriber must review the patients condition within the stated time and prescribe the oxygen accordingly.	To ensure a complete record is maintained and expediate patient treatment. Oxygen is a drug and should be prescribed. The exception to this action would be during emergency situation.
Ensure that the oxygen dose is clearly documented, the flow rate and the correct mask is being used.	In accordance with the administration of medicines policy
Show and explain the oxygen delivery system to the patient.	To obtain consent and cooperation
Inform patient and or relative/ carer of the combustibility of oxygen	Oxygen supports combustion and the fire risk must be minimised
Assemble the oxygen delivery system and connect to the oxygen supply.	To ensure oxygen is given correctly
Attach oxygen delivery system to patient in accordance with manufacturer's instructions.	For oxygen to be administered to patient.
Turn on oxygen flow in accordance with the prescription and manufacturers instruction.	To administer correct dose of oxygen.
The delivery device may be changed in stable patients according to patient preference or comfort	Medical review is not needed when changing delivery device, where the patient's oxygen saturations stay in the prescribed range.
Label all equipment with the patient's name. Masks should be washed daily and replaced when visibly soiled. Nasal specs should be changed every three days (daily for those with MRSA) or when visibly soiled.	Equipment is for single patient use. To minimise risk of infection.
Ensure patient has either a drink or a mouthwash within reach.	To prevent drying of the oral mucosa.
The oxygen and delivery device and oxygen flow rate should be recorded alongside oxygen saturation on EPMA	To provide an accurate record and allow trends in oxygen therapy and saturation levels to be identified.
The prescription should be signed for electronically on EMPA at every drug round	To indicate that the patients is within target, or appropriate action has been taken if not, or else indicate that the patient is breathing air
All patients should have their oxygen saturation observed for at least five minutes after starting oxygen therapy.	To identify if oxygen therapy is maintaining the target saturation or if an increase or decrease in oxygen therapy is required

Appendix 5 Oxygen Cylinder Set Up

Instructions for use

Initial safety checks

Before handling cylinders:
- Ensure your hands are clean
- If you have been using alcohol based gel or liquids make sure the alcohol has totally evaporated

When selecting the cylinder for use, check that the cylinder is clean and not damaged. Ensure the cylinder, particularly the firtree outlet and pressure outlet, are not contaminated with oils or grease such as those used in hand creams.

Step 1: Selecting the right cylinder



1.1 Check the collar label to ensure you have selected a medical oxygen cylinder.



1.2 Check the expiry date on the batch label.
The oxygen should not be used after this date and the cylinder returned to BOC.



1.3 Check the gauge to confirm the cylinder contents.
For new cylinders the needle should be in the green zone.



1.4 To determine there is enough gas in the cylinder check the duration chart for the required flow or use the BOC Remaining Time Estimator app.
If the needle is in the red zone consider selecting a new cylinder.

Step 2: Preparing the cylinder ready for use



2.1 To gain access to the cylinder valve handwheel, pull the tear ring to remove the cylinder valve handwheel cover.
Discard the cover in the appropriate recycling bin.



2.2 The cylinder valve handwheel must not be opened until after the equipment is connected.
Turn the cylinder valve handwheel clockwise to check it is closed.



2.3 Ensure the flow selector on top of the cylinder is set to zero before connecting any equipment.



2.4 Lower the hinged outlet cover to enable equipment to be connected.
Do not remove the hinged outlet cover as it must be closed after use to keep the outlets clean.

Step 3 (a): Setting up the cylinder for patient use using the firtree outlet



3.1 (a) Turn the cylinder so that the outlets are facing away from yourself and the patient before turning on the cylinder.
Keep the cylinder away from the patient until set up has been completed.



3.2 (a) Connect the tubing to the firtree outlet before opening the cylinder valve handwheel.
Ensure the tubing is pushed on securely.



3.3 (a) Turn on the cylinder by slowly rotating the cylinder valve handwheel anticlockwise at least one complete turn. Select 5 lpm on the flow selector and listen for the sound of the oxygen flowing from the firtree outlet.
Allow the oxygen to flow for at least 5 seconds to make sure the cylinder valve handwheel is turned on correctly.



3.4 (a) Once the cylinder has been checked for oxygen flow, select the prescribed patient flow rate for the required therapy and fit the administration equipment to the patient.
Ensure that the correct flow rate number is clearly visible in the flow selector window or aligned with the flow indicator arrow.

Step 3 (b): Setting up the cylinder for patient use using the pressure outlet



3.1 (b) Turn the outlets away from yourself and the patient before turning on the cylinder.
Keep the cylinder away from the patient until set up has been completed.



3.2 (b) Check the probe is clean and free from oil and grease before inserting.
Push the probe into the pressure outlet firmly, applying moderate force until it clicks securely into position.



3.3 (b) Turn on the cylinder by slowly rotating the cylinder valve handwheel anticlockwise at least one complete turn. Select 5 lpm on the flow selector and listen for the sound of the oxygen flowing from the firtree outlet.
Allow the oxygen to flow for at least 5 seconds to make sure the cylinder valve handwheel is turned on correctly.



3.4 (b) Once the cylinder has been checked for oxygen flow turn the flow selector to zero.
The cylinder is now ready for you to turn on the medical device and start the patient therapy.

Step 4: Monitoring during use



4.1 Keep the cylinder upright and facing away from the patient using a suitable cylinder holder.
Avoid placing the cylinder on the patient's bed. If there is no alternative option when moving the patient, only place it on the bed after you have followed the setting up procedure.



4.2 Regularly check the patient's clinical condition during therapy to ensure it remains satisfactory.
If using a mask make sure that it remains fitted correctly. This will ensure that there are no leaks around the mask and that the patient is receiving the prescribed oxygen flow rate.



4.3 Use pulse oximetry where appropriate.
If the pulse oximeter indicates a low oxygen saturation, check the cylinder contents, check for flow and that the administration equipment is fitted to the patient correctly. If you can't identify the problem seek advice.



4.4 Check the contents gauge at regular intervals, to ensure there is sufficient oxygen available.
To determine there is enough oxygen in the cylinder check the duration chart for the required flow or use the BOC Time Remaining Estimator app.

Step 5: After use



5.1 When administration is complete, remove the mask or nasal cannula from the patient.



5.2 Turn off the cylinder by rotating the cylinder valve handwheel clockwise until it comes to a stop.
Do not use excessive force.



5.3 If you have been using the firtree outlet then remove the tubing by firmly pulling the tube, whilst holding the cylinder handle.



5.4 If you have been using the pressure outlet fitted with a push ring, release the probe by pushing the outer ring.



5.5 If you have been using the pressure outlet fitted with a capstan, release the probe by rotating the capstan clockwise while applying pressure to the probe.



5.6 Turn the flow selector to 5 lpm and listen for the flow of oxygen to stop from the firtree outlet. When the flow stops turn the flow selector to zero.



5.7 Close the hinged outlet cover to protect the outlets from contamination when the cylinder is not in use and being returned to BOC for refilling.



5.8 Check the remaining cylinder contents using the gauge. If there is sufficient oxygen left for further treatments, return cylinder to designated "in use" store.
If the needle is in the red section return to the empty cylinder storage area.

Appendix 6 Oxygen CD Cylinder Data

How long does the oxygen cylinder last?

Venturi values will deplete the cylinder quicker the nasal specs due to the flow rate

Oxygen cylinder data

Cylinder data summary

Size	Gauge contents Flowrate (ltr/min)	Full (100%) (hr.min)	Full (100%) (mins)	Half (50%) (hr.min)	Half (50%) (mins)	Low (25%) (hr.min)	Low (25%) (mins)
CD oxygen (product code 101-CD)	15	0.30	30	0.15	15	0.07	7
Nominal contents: 460 litres	10	0.46	46	0.23	23	0.11	11
Nominal cylinder pressure: 230 bar	6	1.16	76	0.38	38	0.19	19
Water capacity: 2.0 litres	4	1.55	115	0.57	57	0.28	28
Nominal weight: 3.5 kg	2	3.50	230	1.55	115	0.57	57
	1	7.40	460	3.50	230	1.55	115

Appendix 7: Monitoring Oxygen

ACTION	RATIONALE
Oxygen saturations must always be interpreted alongside the patient's clinical status incorporating NEWS2 score	To identify early signs of clinical deterioration e.g. changes to respiratory rate
The oxygen and delivery device and oxygen flow rate should be recorded alongside oxygen saturation on EPMA	To provide an accurate record and allow trends in oxygen therapy and saturation levels to be identified.
The prescription should be signed for electronically on EMPA at every drug round	To indicate that the patients is within target, or appropriate action has been taken if not, or else indicate that the patient is breathing air
The oxygen dose should be recorded alongside the oxygen saturation on the bedside observation chart.	S_pO_2 recording cannot be interpreted unless the patient's oxygen dose is known To allow trends in oxygen therapy and saturation levels to be identified.
If the patient falls outside of the target saturation range, oxygen therapy must be adjusted accordingly. The saturation should be monitored continuously for at least 5 minutes after any increase or decrease in oxygen dose to ensure that the patient achieves the desired target.	To maintain the saturation in the desired range

Appendix 8 Oxygen Saturation levels above target range specified or >98% for an extended period

ACTION	RATIONALE
Unless specifically prescribed otherwise, the oxygen dose must be reduced.	To maintain the saturation in the desired range. SpO2 > 98% at rest is above the normal physiological range
Monitor the patient's response to the dose change by re-checking the SpO2 after 5 minutes.	To ensure the dose change was appropriate
If remains above target saturations then the oxygen can be weaned further, with repeat observations in 5 minutes	To ensure correct dose and patient safety
Oxygen weaned off. Patient must be checked at 5 minutes and 1 hour post removal	To ensure patient safety

Appendix 9 Oxygen Saturation levels below target range specified

ACTION	RATIONALE
Check all elements of oxygen delivery system for faults or errors.	Equipment faults should be excluded.
Increase the oxygen dose	To keep the saturation in the desired range
Any sudden fall in oxygen saturation should lead to urgent clinical evaluation of the patient (including NEWS 2 score) with actions taken in accordance with the Policy on the recognition and management of the deteriorating patient	Falling oxygen saturations are one of the indicators of patient deterioration. Where a patient requires an increase in their oxygen, the cause of their increasing oxygen need must be formally assessed.
Monitor the patient's response to the dose change by re-checking the SpO2	To ensure the dose change was appropriate
In people who are at risk of carbon dioxide retention, repeat arterial or capillary blood gas analysis half to one hour after the dose oxygen change.	To assess the patients response to oxygen increase, and ensure that PaCO2 has not risen to an unacceptable level, or pH dropped to an unacceptable level Arterial blood gas sampling is painful and should only be done when the results will affect clinical decision making.

Appendix 10 Therapy Support Worker / Respiratory ward HCA Enhanced Oxygen Competencies

Staff members must have completed enhanced competency sign off from either qualified nurses or physiotherapists prior to using oxygen cylinders and oxygen flow meters on the wards.

Competency Indicator		Self-Assessment Signature	Assessor Name & Signature
1	To have passed the oxygen ESR module		
2	Demonstrate how to accurately administer oxygen via a cylinder including opening value and flow meter		
3	Demonstrate how to switch between piped and cylinder oxygen delivery		
4	Be able to calculate how long a cylinder will last at a given rate		
5	Identify ways in which oxygen may be unintentionally interrupted/ stopped and the risk posed		
6	Competent with storing, moving, and handling of cylinders		
7	Be able to recognise when patients' respiratory status has changed i.e., dyspnoea, cyanosis		
8	Understand how oxygen is prescribed and recorded including target saturations, delivery method and flow		
9	Competent in oxygen saturation measurement devices		
10	Demonstrate accurate recording of oxygen saturations, respiratory rate and delivery device in notes		
11	Awareness of up-to-date oxygen policy		

Following completion of all competencies

I _____ have completed the enhanced oxygen competencies. It is my responsibility to maintain my knowledge and skills regarding oxygen management. If learning areas are identified, it is my responsibility to find further training.

The competencies should be reviewed annually at PDR

Signed: _____

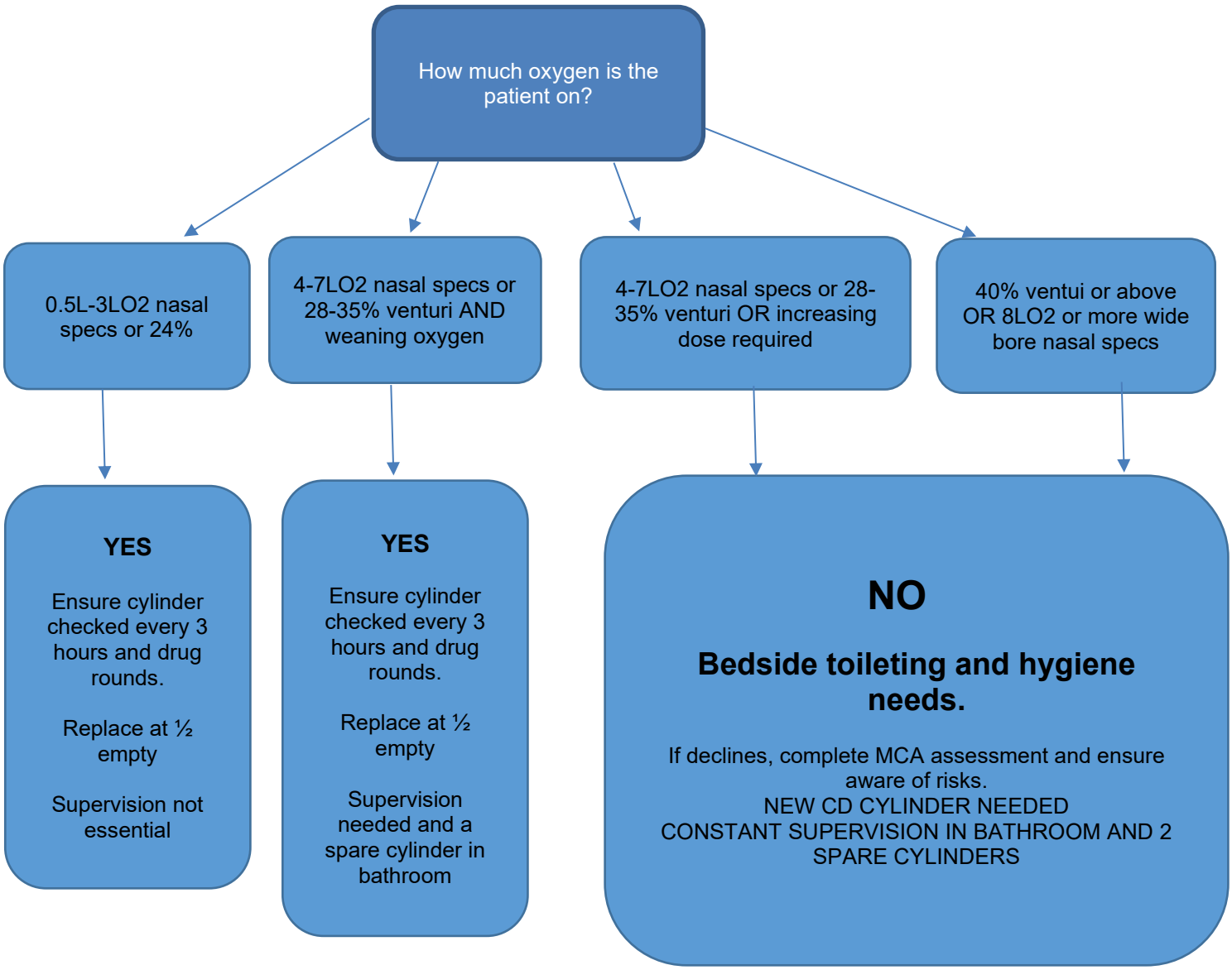
Name: _____

Date: _____

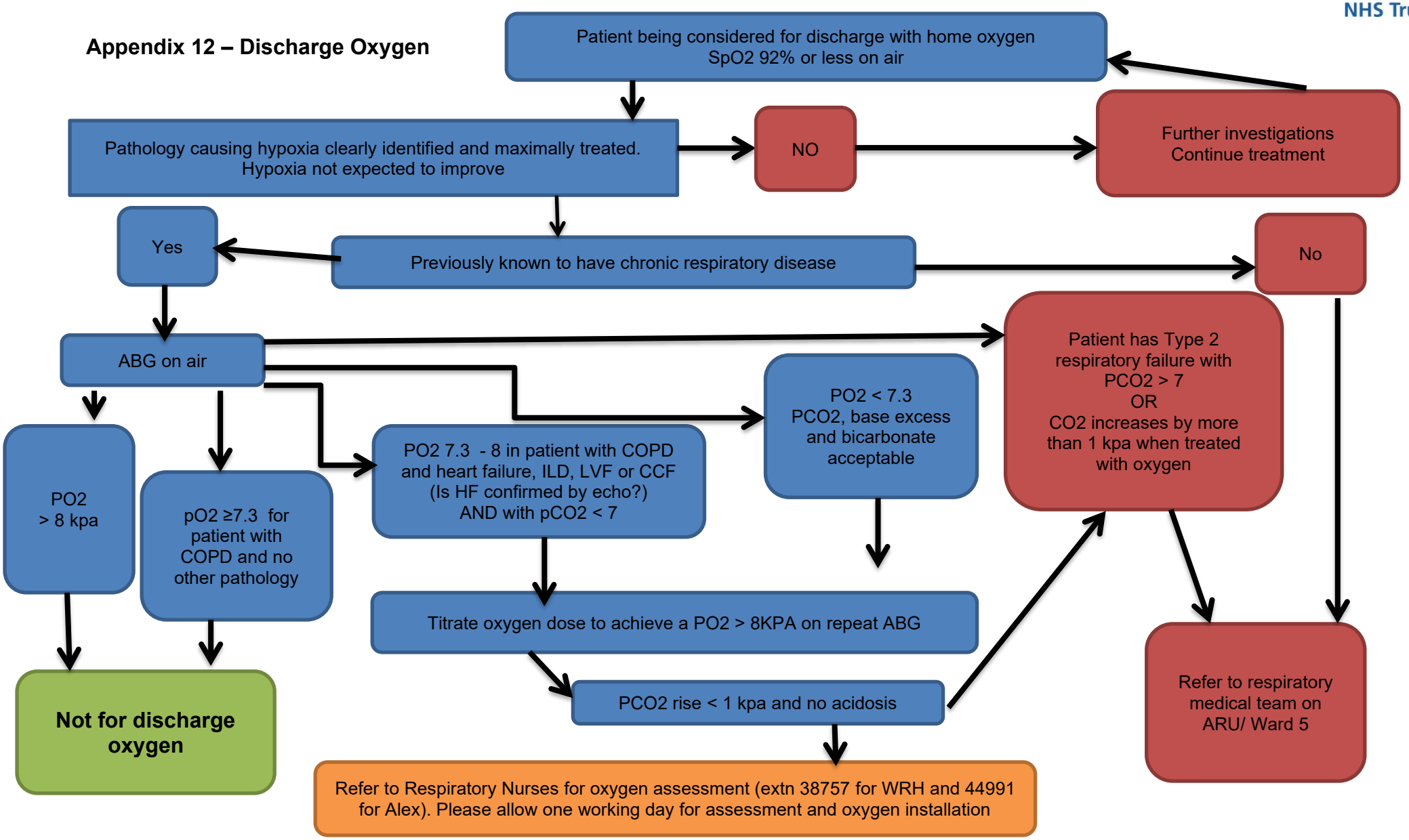
Enhanced Oxygen Competencies.docx

Appendix 11: Bathroom Oxygen Flowchart

CAN YOUR PATIENT SAFELY USE THE BATHROOM?



Appendix 12 – Discharge Oxygen



Worcestershire Acute Hospitals NHS Trust

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and included as an appendix to key document when submitted to the appropriate committee for consideration and approval.

Please complete assessment form on next page

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust	X	Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust		Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	**Jane Newport**

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
	Jane Newport	**Respiratory Lead Practitioner**	**j.newport@nhs.net**
Date assessment completed	**2/6/2026**		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title: Guideline for the prescribing, monitoring and administration of oxygen in adults.**
What is the aim, purpose and/or intended outcomes of this Activity?	This document provides clinical guidance and best practice guidance for the use of oxygen within Worcestershire Acute NHS Trust. To ensure all staff are aware of how to prescribe, monitor and administer oxygen to patients within WAHT

Who will be affected by the development & implementation of this activity?	❑ ☒ ❑ ❑	Service User Patient Carers Visitors	☒ ❑ ❑ ❑	Staff Communities Other _____	
Is this:	☒ Review of an existing activity ❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?				
What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	Following a review, the clinical guidance has been updated. This document supports the implementation of the Clinical Policy for the use of Nebulisers. This guidance has also been updated following a national patient safety alert (NPSA) Reviewed published evidence regarding oxygen prescription, administration and monitorings. Based on British Thoracic society guideline				
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	The guidance was developed by the Respiratory Consultant team. The guidance has been reviewed and approved through the Trust Clinical Governance Group.				
Summary of relevant findings	Due to the NPSA the findings of discussions to implement the use of mechanical nebulisers has been agreed. Change to oxygen training package Change to nebuliser and air section- need to use compressor box				

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Disability	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Gender Reassignment	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Marriage & Civil Partnerships	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Pregnancy & Maternity	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Race including Traveling Communities	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Religion & Belief	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Sex	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Sexual Orientation	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)	X			The use of mechanical nebulisers will allow all patients to receive the same, high quality standard of care. Reducing the possibility of the serious incident reoccurring.

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe

		.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)	**EIA will be routinely reviewed with the policy in 2024.**			

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation
1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.
1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	Jane Newport
Date signed	2/6/2026
Comments:	
Signature of person the Leader Person for this activity	
Date signed	
Comments:	

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval