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PASSY-MUIR SPEAKING VALVE (PMSV) GUIDELINE

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.

This guideline is for use by the following staff groups:

- Group 1- Critical Care Medical/Nursing and AHP (Physio/SALT) staff
- Group 2- Ward-based Medical/Nursing and AHP (Physio/SALT) staff with tracheostomy care competencies
- Hospital Outreach 24/7 with tracheostomy care competencies

Lead Clinician(s)

Dr Mike McAlindon

Consultant in Anaesthetics & ICM

Approved by Intensive Care Forum and Critical Care Governance meeting on:

13th October 2025 & 15th October 2025

Approved by Medicines Safety Committee on:
Where medicines are included in document.

N/A

Review Date:

15th October 2028

This is the most current document and should be used until a revised version is in place

Key amendments to this guideline

Date	Amendment	Approved by
8 th October 2019	Document extended with no changes as part of Disease Management section in critical care	Dr Nick Cowley/Dr Andy Burtenshaw
14 th October 2022	Document reviewed with no changes	Intensive Care Forum/SCSD Governance
23 rd September 2025	Minor amendments to wording only	Dr Mike McAlindon

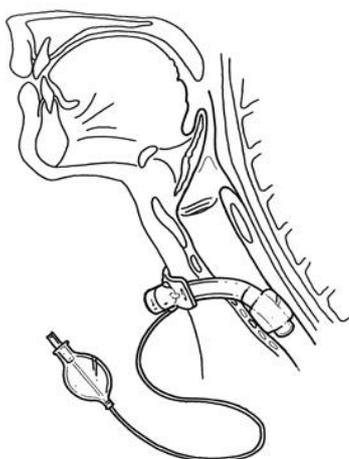
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INTRODUCTION

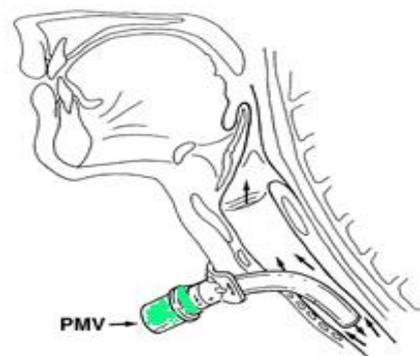
Critically ill patients requiring long term mechanical ventilation through a cuffed tracheostomy tube are unable to verbally communicate (Kaut et al 1996), and impaired communication is cited by many as being the major source of interpersonal stress associated with mechanical ventilation (Gries and Fernsler 1988, Bergbom-Engberg and Haljamäe 1988). Tracheostomy speaking valves consist of a one way valve that closes upon exhalation, causing a redirection of exhaled gas into the upper airway, thus allowing for the primary benefit of speech without resorting to writing, gesticulating or lip reading, which can be frustrating to both patient and caregiver (Lichtman et al 1995).

The Passy-Muir Speaking Valve (PMSV) is a relatively simple, effective and inexpensive device which allows verbal communication in the short and long term mechanically ventilated patient. It consists of a one-way, closed position, no leak, silicone diaphragm check valve that fits over the end of the tracheostomy tube. The valve opens during inspiration and closes during expiration to direct exhaled air through the upper airway via the vocal cords, mouth and nose (Elpern et al 2000). With the PMSV speech is louder, stronger and resembles a normal speech pattern (Kaut et al 1996). One way valve placement may not be beneficial for all patients (Suiter et al 2003), however studies have found that there is a significant reduction in secretions with the use of a speaking valve (Lichtman et al 1995, Passy et al 1993), possibly as a result of redirection of airflow to the oral and nasal passages allowing secretions to be expectorated or swallowed, thus reducing the requirement for suctioning through the tracheal lumen. Swallowing skills also improve because the speaking valve normalises pressure below the level of the glottis, thus potentially improving swallowing efficiency (Lichtman et al 1995, Kaut et al 1996). Many patients also reported a vastly increased sense of smell, helping to improve a patients' appetite.

Patients with tracheostomy tubes often have risk factors other than the presence of a tracheostomy tube that predispose them to aspirate e.g. Chronic Obstructive Pulmonary Disease, Head Injury (Suiter et al 2003), the presence of the PMSV helps to reduce aspiration in selected patients with tracheostomies (Elpern et al 2000).



Tracheostomy with a 'cuff', preventing airflow to or from the nose or mouth.



The one-way Passy-Muir Speaking Valve (PMSV) allows inhalation through the tracheostomy tube, but the exhaled air must pass the vocal cords and the mouth or nose.

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DETAILS OF GUIDELINE

To aid weaning, encouraging early cuff down trials to aid patient communication, psychological well being, swallow, cough strength, and early physical rehabilitation.

MAINTENANCE OF AIRWAY PRESSURES WITH PMSV

The PMSV membrane is designed to stay in a closed position, opening only during inspiration, to minimise the work of breathing and to trap air within the tracheostomy tube to inhibit occlusion of the valve by secretions (Kaut et al 1996). The design also facilitates the restoration of Positive End Expiratory Pressure (PEEP), which can result in a lowering of the mechanically set levels of PEEP (Frey and Wood 1991). Adjustments which are important when mechanically set levels of PEEP are greater than 5cm are achieved by monitoring volume, pressure and physiological variables during PMSV trials. Pressures generated by the valve may effect initial compensation settings and require adjustment after placement (Kaut et al 1996).

Consider PMSV use via MDT discussions once a patient is on a spontaneous breathing mode of ventilation (SPN – CPAP, Pressure Support of 14 cmH20, Positive End Expiratory Pressure 8 cmH20), alert, understanding the procedure and following instructions.

The PMSV used for patients with a tracheostomy who are on mechanical ventilation is the PMSV 007, an aqua coloured tapered valve with an internal diameter of 15mm and an external diameter of 22mm.

Summary of the Benefits of Using a PMSV:

- Restores a closed respiratory system
- Improves speech production
- Improves swallowing
- May reduce aspiration
- Facilitates secretion management
- Facilitates weaning
- Expedites decannulation
- Improves olfaction
- Promotes better hygiene elimination of finger occlusion, filters air

Patients Who May Benefit From the PMSV:

- ✓ COPD
- ✓ Neuro-muscular diseases
- ✓ Ventilatory dependent patients
- ✓ Quad / Paraplegia
- ✓ Non-obstructive laryngeal tumours
- ✓ Closed head injury / trauma
- ✓ Bronchopulmonary Dysplasia
- ✓ Bilateral Vocal Cord Paralysis
- ✓ Mild Tracheal / Laryngeal Stenosis
- ✓ Tracheomalacia
- ✓ Sleep apnoea patients

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USE THE PMSV WITH CAUTION FOR:

- Patients with thick secretions
- Severe COPD patients

PATIENTS WHERE THE USE OF A PMSV IS ABSOLUTELY CONTRAINDICATED:

- Unconscious or comatosed patients
- Patients unable to tolerate an uncuffed tracheostomy tube
- Severe upper airway obstruction
- Patients who are unconscious
- Patients with frequent aspiration
- Unmanageable secretions

Competencies required

Qualified nurse who has undergone the appropriate training

Patients covered

Any patient in Critical Care with a tracheostomy, who might benefit from the use of a speaking valve.

Assessment and preparation of the patient

- Document base-line observations of Pulse, BP, Respiratory Rate, FiO₂, O₂ Sats, Arterial Blood Gases, Level of Consciousness
- Inform the patient about what you are going to do and why
- Clear tracheal and oral secretions
- Completely deflate the tracheostomy cuff whilst suctioning to remove secretions trapped above, and assess for signs of respiratory insufficiency.
- Patients will be unable to breathe if the cuff is not completely deflated.
- Inspect the tracheostomy tube to ensure that it does not exceed 2/3 of the size of the tracheal lumen.
- Assess glottal patency by occluding the tracheostomy lumen with your fingers to ensure air passes easily around the deflated cuff through the upper airway. Changing to a smaller tracheostomy tube may be needed to provide sufficient exhaled airflow.
- If respiratory insufficiency persists reinflate the cuff and reassess at another time.
- Place the PMSV directly between the tracheostomy tube and the respiratory circuit
- Observe the patient to ensure the diaphragm opens during inspiration and closes during exhalation
- Ventilation mode, rate, volumes, pressures, PEEP and FiO₂ must be adjusted by the ICU Consultant to compensate for losses and maintain patient comfort.
- Disable the expiratory ventilator alarms as expired air will be exhaled via the nose and mouth not through the ventilator.
'Sensory-Parameters – Flow – Monitoring off'
- Label the tracheostomy tube to say that the cuff is deflated. **It is vital that all members of the team know the status of the cuff**
- Encourage the patient to attempt to speak.
- Start with short periods as tolerated, increasing frequency and time of use within pts individual weaning plan.

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CARE OF THE PATIENT ON A PMSV

Many patients adjust immediately and easily to the PMSV however some patients will require a gradual transition. The Critical Care Nurse must monitor the patient for tolerance to the PMSV.

- Continuously monitor patients breathing pattern, work of breathing, respiratory rate, oxygen saturations, heart rate, blood pressure, end-tidal carbon dioxide level, secretion load and fatigue during PMSV use.
- Monitor CO₂ levels by checking ABGs within 30 minutes of commencing the trial and as required
- Monitor work of breathing, accessory muscle utilisation and other indicators of respiratory insufficiency
- Assess tracheal and oral secretions
- ICU Consultant to refine ventilator settings as necessary
- Do not leave the patient unsupervised
- Terminate the trial when the patient indicates fatigue
- Assess the patient for changes in swallowing, smelling, coughing, ventilator weaning and secretion management
- Use caution when using a PMSV with A Heat Moisture Exchanger (HME). When using a HME humidity is obtained from exhaled breath. When the PMSV is in place air is not exhaled via the tracheostomy which might affect the HME performance and extra humidification may be required.
- For non-ventilated patients humidity and oxygen can be applied via a humidified tracheostomy circuit and mask

REMOVAL OF THE PMSV

- At the end of the trial remove the PMSV from the circuit
- Inflate the cuff
- Recommence the patient on pre-trial ventilator settings
- Cleanse the PMSV in warm water

ADDITIONAL PRECAUTIONS

Remove the PMSV when:

- The patient has planned rest
- During nebuliser treatment
- Other interventions that potentiate aspiration
- Do not use for 48 hours post changing of a tracheostomy tube due to possible swelling

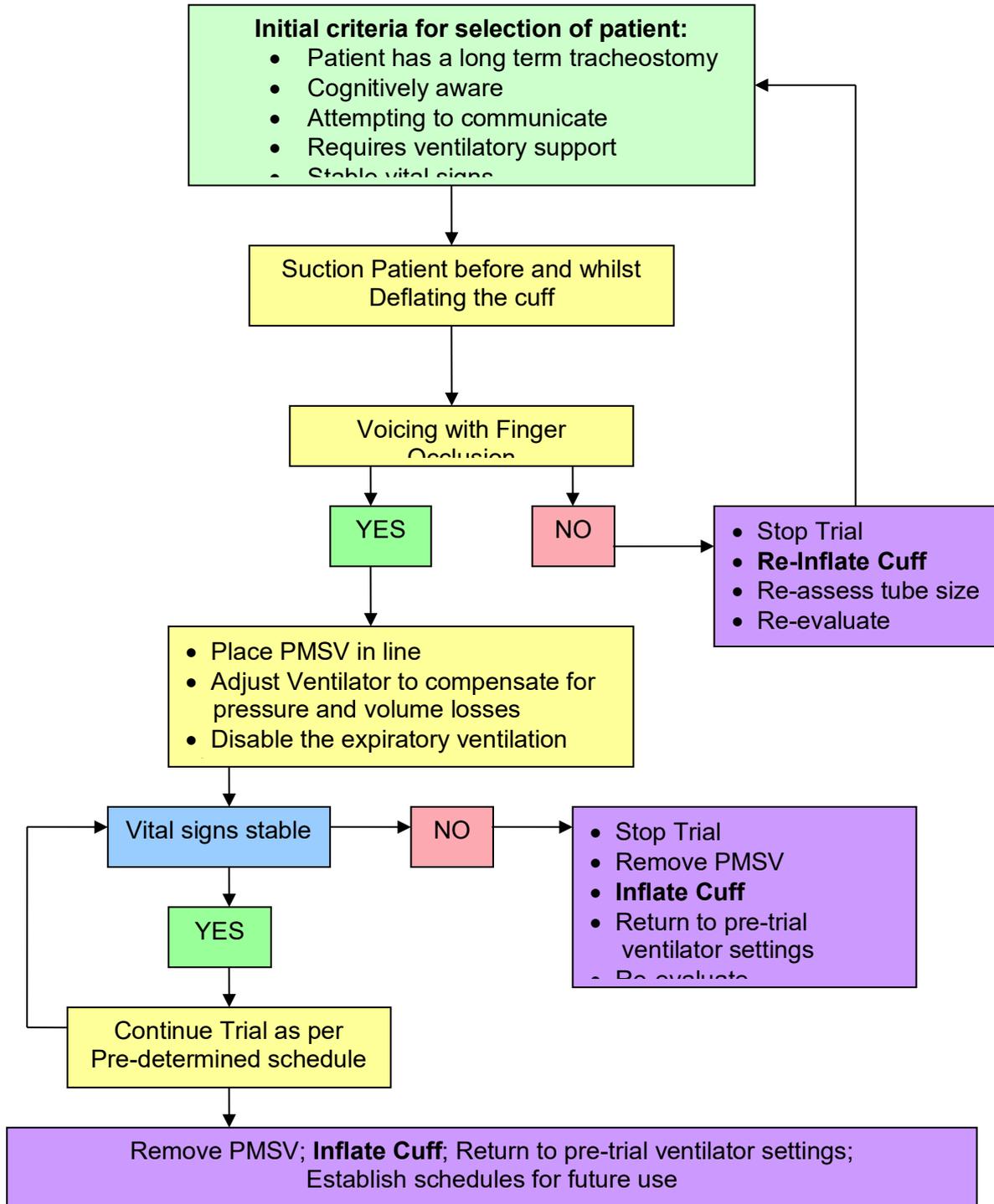
CARE OF THE PMSV

- Single patient use only
- Can be tolerated for 16 – 18 hours a day in some patients
- Clean between use or if excess secretions with soap and warm water. Rinse with clear water and allow to dry thoroughly
- Each PMSV is guaranteed to last for a minimum of 2 months.

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PASSY-MUIR DECISION TREE



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Heart and Lung. The Journal of Acute and Critical Care. Vol. 29 (4)
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- Gries M. 1988 Patients Perception of the Mechanical Ventilation Experience
Focus on Critical Care 15 (2); pages 52 - 59
- Kaut K. 1996 Passy-Muir Speaking Valve
Dimensions of Critical Care Nursing
Vol 15. (6)
- Lichtman S. 1995 Effect of a Tracheostomy Speaking Valve on Secretions, Arterial Oxygenation, and Olfaction: A Quantitative Evaluation
Journal of Speech and Hearing Research
Vol. 38, pages 549 - 555
- Passy V. 1993 Passy-Muir Tracheostomy Speaking Valve on Ventilator Dependent Patients
Laryngoscope 103; pages 653 - 658
- Suiter D. 2003 Effect of Cuff Deflation and One-Way Tracheostomy Speaking Valve Placement on Swallowing Physiology
Dysphagia 18; pages 284 - 292

MONITORING AND COMPLIANCE

This section should identify how the Trusts plan to monitor compliance with and the effectiveness of this Treatment pathway. It should include auditable standards and/or key performance indicators (KPIs) and details on the methods for monitoring compliance

What	How	Who	Where	When
<i>These are the 'key' parts of the process that we are relying on to manage risk.</i>	<i>What are we going to do to make sure the key parts of the process we have identified are being followed?</i>	<i>Who is responsible for the check?</i>	<i>Who will receive the monitoring results?</i>	<i>Set achievable frequencies.</i>
Each patient should have complete sets of observations and a NEWS score calculated	Compliance with NEWS will be monitored by audit of patient observation charts	Ward Managers	Director of Nursing, Matrons	Weekly
Transfers from critical care should avoided between 22:00 and 07:00	Compliance with avoidance of out of hours transfers will be monitored via ICNARC data	ICNARC clerk	Consultant Clinical Lead ICU	Monthly
Patients transferred from critical areas should have a formal documented structured handover of care	Compliance with transfer documentation will be monitored by audit of patients notes	Outreach Team/FY1	Matron for ICU Clinical Director	Once Yearly
Critical Care Nutrition guidelines	Observation and chart reviews	Sr Julie Share, Nutrition Link Nurse Critical Care ALX, Sr Andrea Carn, Nutrition Link Nurse, WRH		Six monthly intervals
Management of patients with tracheostomy tubes	Audit	Critical Care outreach teams and physiotherapists at Alex and WRH		All tracheostomy patients

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Contribution List

This key document has been circulated to the following individuals for consultation:

Name	Designation
Dr Steve Digby	Consultant, Intensive Care Medicine
Dr Steve Haynes	Consultant, Intensive Care Medicine
Dr Philip Harrington	Consultant, Intensive Care Medicine
Dr Edwin Mitchell	Consultant, Intensive Care Medicine
Dr Jeremy Thomas	Consultant, Intensive Care Medicine
Dr Gavin Nicol	Consultant, Intensive Care Medicine
Dr Stephen Pearson	Consultant, Intensive Care Medicine
Dr Laura Kocierz	Consultant, Intensive Care Medicine
Dr Sian Bhardwaj	Consultant, Intensive Care Medicine
Dr Laura Tulloch	Consultant, Intensive Care Medicine
Dr Philip Pemberton	Consultant, Intensive Care Medicine
Dr Shiju Mathew	Consultant, Intensive Care Medicine
Dr Nick Fitton	Consultant, Intensive Care Medicine
Dr Nick Cowley	Consultant, Intensive Care Medicine
Dr Olivia Kelsall	Consultant, Intensive Care Medicine
Dr Gareth Sellors	Consultant, Intensive Care Medicine
Dr Andrew Burtenshaw	Consultant, Intensive Care Medicine
Vikki Muller	ICU Band 7 Physiotherapist

This key document has been circulated to the chair(s) of the following committee's / groups for comments:

Dr Mike McAlindon	Consultant & Clinical Director, Critical Care
ICM Forum	Approved by ICM Forum 13 th October 2025
SCSD Critical Care Directorate Governance Meeting	Approved by Critical Care Directorate governance meeting 15 th October 2025

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.



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	<input type="checkbox"/>	Herefordshire Council	<input type="checkbox"/>	Herefordshire CCG	<input type="checkbox"/>
Worcestershire Acute Hospitals NHS Trust	<input checked="" type="checkbox"/>	Worcestershire County Council	<input type="checkbox"/>	Worcestershire CCGs	<input type="checkbox"/>
Worcestershire Health and Care NHS Trust	<input type="checkbox"/>	Wye Valley NHS Trust	<input type="checkbox"/>	Other (please state)	<input type="checkbox"/>

Name of Lead for Activity	Dr Mike McAlindon, CD for ICM
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Details of individuals completing this assessment	<table border="1"> <thead> <tr> <th>Name</th> <th>Job title</th> <th>e-mail contact</th> </tr> </thead> <tbody> <tr> <td>Dr Mike McAlindon</td> <td>CD for ICM</td> <td>michaelmcAlindon@nhs.net</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			Name	Job title	e-mail contact	Dr Mike McAlindon	CD for ICM	michaelmcAlindon@nhs.net			
	Name	Job title	e-mail contact									
	Dr Mike McAlindon	CD for ICM	michaelmcAlindon@nhs.net									
Date assessment completed	25/11/25											

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	Title: PASSY-MUIR SPEAKING VALVE (PMSV) GUIDELINE			
What is the aim, purpose and/or intended outcomes of this Activity?	Tracheostomy safety and care			
Who will be affected by the development & implementation of this activity?	<input checked="" type="checkbox"/> Service User <input checked="" type="checkbox"/> Patient <input checked="" type="checkbox"/> Carers <input type="checkbox"/> Visitors	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Staff Communities Other _____	
Is this:	<input checked="" type="checkbox"/> Review of an existing activity <input type="checkbox"/> New activity <input type="checkbox"/> Planning to withdraw or reduce a service, activity or presence?			

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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.	Previous guideline updated.
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	Critical Care MDT inc. Physio
Summary of relevant findings	Guideline approved

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 <u>positive</u> impact	Potential <u>neutral</u> impact	Potential <u>negative</u> impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age		x		
Disability	x			Improved verbal communication
Gender Reassignment		x		
Marriage & Civil Partnerships		x		
Pregnancy & Maternity		x		
Race including Traveling Communities		x		
Religion & Belief		x		
Sex		x		

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Equality Group	Potential <u>positive</u> impact	Potential <u>neutral</u> impact	Potential <u>negative</u> impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Sexual Orientation		x		
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)		x		
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		

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	On review of guideline			

revisited regularly throughout the design & implementation)	
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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	Dr Mike McAlindon
Date signed	25/11/25
Comments:	
Signature of person the Leader Person for this activity	Dr Mike McAlindon
Date signed	25/11/25
Comments:	



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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.