**MEDICAL GAS CYLINDERS AND MEDICAL PIPELINE SYSTEMS (MGPS) POLICY**

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<tr>
<th>Version:</th>
<th>4</th>
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<tr>
<td>Date issued:</td>
<td>April 2018</td>
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<td>Review date:</td>
<td>April 2021</td>
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<tr>
<td>Applies to:</td>
<td>All staff (excluding office and clerical staff)</td>
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This document is available in other formats, including easy read summary versions and other languages upon request. Should you require this please contact the Equality and Diversity Lead on 01278 432000
Amendments: Revised to include the use of oxygen and the need to complete untoward event form.

Minor amendments due to changes in cylinder, i.e. new cylinders have integral pressure gauges.

Inclusion of guidance of transportation of cylinder in private vehicles—Appendix A.

Document Summary: The purpose of this document is to ensure that all employees are aware of the contents of this document and all trained nursing staff are competent in safe storage, handling and transfer of medical gas cylinders + PMGP.

Monitoring arrangements and indicators: See relevant section in policy.

Training/resource implications: See relevant section in policy.

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<tr>
<th>Approving body</th>
<th>Health, Safety, Security and Estates Management Group</th>
<th>Date: March 2018</th>
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<tr>
<td>Equality Impact Assessment</td>
<td>Impact Part 1</td>
<td>Date: April 2018</td>
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<td>Ratification Body</td>
<td>Senior Management Team</td>
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<tr>
<td>Contact for review</td>
<td>Estate Manager</td>
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<td>Lead Director</td>
<td>Director of Governance and Corporate Development</td>
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CONTRIBUTION LIST Key individuals involved in developing the document:

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<tr>
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<td>Appendix A</td>
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1. INTRODUCTION

1.1 Somerset Partnership NHS Foundation Trust recognises its responsibility under the Health and Safety at Work Act 1974 to ensure the safe storage, use of medical gas cylinders and medical gas pipeline services.

1.2 This policy covers the installation, maintenance and operation of Medical Gas Pipeline Systems (MGPS) within Somerset Partnership NHS Foundation Trust hospitals, up to and including the terminal units (wall outlets). Responsibility for MGPS systems rests with Estates Services.

1.3 Medical gas equipment after the terminal units (including hoses, suction units and oxygen therapy units) is not covered by these procedures. Medical gas equipment after the terminal units is repaired and maintained by Service Level Agreements/Specialist Contractors.

1.4 This policy shall be approved, and reviewed at intervals not exceeding 3 years, by the Trusts Health and Safety and Environment Committee.

1.5 After ratification (including subsequent ratification of any amendments) the Responsible Person (MGPS) will circulate copies to all interested parties.

1.6 This policy, together with all the MGPS management systems, will be subject to annual audit by the Authorising Engineer (see section 3.3). This policy should also be reviewed following any incidents involving medical gas pipeline systems, whether with the Trust, or outside.

2. PURPOSE & RATIONALE

2.1 The purpose of this document is to ensure that all employees are aware of the contents of this document and all staff who are required to use medical gases are competent.

3. DUTIES AND RESPONSIBILITIES

3.1 The Health & Safety Group, along with the Estates & Facilities Governance Group are responsible for reviewing oxygen-related incidents. A robust approach to the use of Medical Gases is essential to reduce the risk to patients/staff and the buildings.

3.2 The MGPS will be managed by the Estates and Facilities Team who will manage the system using the necessary guidance:

- Health and Safety at Work Act 1974
- Control of Substances Hazardous to Health
- Department of Health Technical Memorandum HTM 02-01 Medical Gas Pipeline Services: (i) Part A Design, Installation, Validation and Verification, (ii) Part B Operation Management
- NHS Model Engineering Specification C11 Medical Gases
4. **DEFINITIONS**
   - BOC – British Oxygen Company
   - COSHH – Control of Substances Hazardous to Health
   - MGPS – Medical Gas Pipeline System

5. **PROCEDURES TO BE FOLLOWED IN THE USE OF PORTABLE CYLINDERS**

5.1 Wards/teams must order and use smaller, portable cylinders with fixed regulators that deliver up to 15 litres of oxygen per minute. There is a reduction of risk during safe handling and the cylinders do not require the removal of the regulator. Where oxygen is used on a regular basis, the large cylinders (with fixed regulators) will be used on MGPS.

5.2 Maintenance - The Estates and Facilities Team will arrange for routine maintenance and testing of fixed medical gas regulators by a competent contractor, if the regulator is not part of the cylinder (white light weight cylinder).

5.3 Cylinder supply and stockholding in designated Trust buildings is the responsibility of the respective ward/team manager/matron.

5.4 Storage - Large cylinders should be stored in an oxygen trolley, if not they must be secured to the wall and risk assessed in an outside storage facility when not in use in accordance with BOC recommendations. Large cylinders also need to be risk assessed when in use in order to ensure the safety of patients and others i.e. the risk of toppling over. Signage needs to be displayed in all areas where oxygen cylinders are stored, including clinic rooms.

5.5 Data sheets must be available for this product. These are available from BOC Medical.

5.6 Only one spare cylinder should be stored on the ward. Where necessary, extra cylinders should be stored in an appropriately constructed external storage area. This area should be checked weekly to ensure that it is not being overloaded, empty cylinders are being collected regularly and stock is not left to build up. Empty and full cylinders should be segregated, indicating which are full and which are empty, within the outside storage facility. Only medical gases to be stored in the outside storage area. This is to be monitored as part of the weekly checks. Under no circumstances should other gases such as Propane gas should be stored in this area.

5.7 Transport - Deliveries to sites by approved suppliers. Medical gas transported in staff vehicles for use in domestic situation etc. caution must be taken and the recommendation in Appendix A when transporting cylinders.

5.8 Safe medical gas cylinder handling shall be included in the recorded moving and handling assessments where appropriate with staff trained accordingly. The correct size and type of trolley should always be used for the safe transportation of medical gas cylinders in line with recommendations from BOC.

5.9 Leak testing – cylinders – after changing a cylinder and at any other time when the equipment is to be used, an audible test should be made in ensure a gas-tight connection.
5.10 Leaks – if a leak is detected or suspected, staff must follow the BOC faulty equipment procedure. This is done by telephoning BOC Medical on 0800 111 333. A DATIX form should be completed if any leaks are detected or suspected.

5.11 Fire – in the event of a fire, normal fire procedure must be followed. In addition, the fire service must be informed of the presence and location of any medical gas cylinders. The Fire Service will then offer evacuation advice. After the incident, the procedure for reporting faulty/incident cylinders should be followed, as below. A DATIX form should be completed as per Trust policy in the event of fire.

5.12 All faulty or incident cylinders (as above) must be returned to the approved supplier. This includes “Date expired” cylinders and cylinders with a missing “Tickopress” (batch and date) label. A DATIX form should be completed for all faulty or incident cylinders.

5.13 In the event of an incident a DATIX form is to be completed using the electronic Untoward Event Report form accessible on the Intranet.

6 OPERATIONAL MANAGEMENT OF MEDICAL GAS PIPELINE SYSTEMS

6.1 The Chief Executive of the Trust has ultimate management responsibility for the safe operation of medical gas pipeline systems within the Trust.

The Chief Executive is responsible for:

- ensuring there are clear operational procedures for the safe operation of medical gas pipeline systems within the Trust
- formally appointing a senior manager with Estates Services, in writing, as the Responsible Person (MGPS), having overall responsibility for the safe operation and maintenance of the medical gas pipeline systems within the Trust
- ensuring that the operational procedures are fully implemented and monitored by appropriate designated key personnel

6.2 The Estate Manager will fulfil the role of Responsible Person (RP) holding overall responsibility for the integrity and operation of the medical gas pipeline systems. Specific responsibilities include:

- ensuring that the operational procedures for the safe operation of medical gas pipeline systems (MGPS) within the Trust are developed, implemented, complied with, and periodically reviewed and updated
- retaining the services of a suitably qualified and experienced Authorising Engineer (MGPS)
- arranging the appointment of an appropriate number of suitably qualified and experienced Authorised Persons (MGPS), including appointment of one Coordinating Senior Authorised Person (MGPS)
ensuring that the medical gas pipeline systems are properly maintained

6.3 The responsibilities of the Authorising Engineer (AE) are set out in HTM 02-01, but they include:

- recommending to the RP the number of Authorised Persons (MGPS) needed
- ensuring that all Authorised Persons (MGPS) have satisfactorily completed appropriate training before appointment
- ensuring that all AP’s are re-assessed periodically, and have attended refresher training prior to re-assessment
- formally recommending to the RP the appointment of all AP’s
- conducting an annual audit and review of the MGPS management systems, with recommendations
- Provision of advice on MGPS to the RP, AP’s and any other interested parties

6.4 The responsibilities of Authorised Persons (MGPS) are detailed in HTM 02-01 and in these procedures, but they include:

- day to day management of the medical gas pipeline systems, ensuring that the operational procedures for the safe operation of medical gas pipeline systems are implemented and adhered to
- planning and management of any work to the medical gas pipeline system, including interruptions to supply. This will include issuing of Permits, operation of the Permit to Work system, and advice and guidance to Competent Persons
- ensuring that works to medical gas pipeline systems are carried out only by staff or contractors competent to do so;

Authorised Persons may be appointed from within Somerset Partnership NHS Foundation Trust, from a neighbouring Trust, or from a specialist agency offering Authorised Person (MGPS) services, see HTM 02-01 paragraph 4.31.

Authorised Person appointments can only be made on the recommendation of the Authorising Engineer (MGPS). Authorised Persons (MGPS) shall be formally appointed, in writing, by the Chief Executive.

One Authorised Person shall be appointed as the Coordinating Senior Authorised Person, having overall responsibility for the day to day medical gas pipeline systems, and for coordination of all the Authorised Persons.
6.5 The Competent Person (MGPS) is the person who carries out the installation and/or maintenance work on the medical gas pipeline systems. The responsibilities of the Competent Person are covered in HTM 02-01 (including paragraph 6.92). Only Competent Persons (MGPS) are permitted to work on medical gas pipeline systems.

6.6 The Quality Controller (MGPS) is responsible for the quality control of the medical gases at the terminal unit, and for carrying out all necessary quality and identity testing of medical gases.

Only individuals who have been appointed to the Quality Controller (MGPS) Register may act as Quality Controller (MGPS).

Appointments to the Quality Controller (MGPS) Register will be made only by the Regional Quality Control Pharmacist.

6.7 Designated Porters (MGPS) are responsible for:
- the storage and handling of all medical gas cylinders
- changing medical gas cylinders on all manifolds

**Medical Equipment Services**

6.8 Designated Porters are responsible for:
- provision and management of temporary alternative medical gas supplies, on behalf of the Authorised Person, during planned medical gas interruptions
- provision of training in the safety precautions and use of medical gas cylinders and medical gas pipeline systems, training available on e-learning

6.9 General and departmental managers are responsible for:
- ensuring that staff working with medical gas cylinders or medical gas pipeline systems attend training in the safe use of medical gas cylinders and medical gas pipeline systems
- notifying the Responsible Person (MGPS) or the Authorised Person (MGPS) of any deficiency or requirement for the MGPS (i.e. inadequate provision of outlets)
- consulting with the Authorised Person (MGPS) prior to procurement of MGPS connected medical equipment, to ensure that the medical gas pipeline system can support the new equipment
7. TRAINING REQUIREMENTS – PORTABLE CYLINDERS

7.1 The Trust will work towards all staff being appropriately trained in line with the organisation’s Staff Training Matrix (training needs analysis). All training documents referred to in this policy are accessible to staff within the Learning and Development Section of the Trust Intranet – e-learning.

7.2 All trained staff who change cylinders must have been shown how to use the oxygen and handle the cylinders safely as part of their induction, which needs to be recorded appropriately. This is the responsibility of the ward manager on in-patient wards.

8. TRAINING REQUIREMENTS – MEDICAL GAS PIPELINE SYSTEMS

8.1 Authorising Engineers (MGPS) must meet the minimum training standards set out in HTM 02-01 paragraphs 7.34 and 7.35.

8.2 Authorised Persons (MGPS) must meet the minimum training standards set out in HTM 02-01 paragraphs 7.35 and 7.36.

8.3 The Competent Person (MGPS) may be a member of a specialist contractor’s staff, or of the Estates Maintenance Services department.

Where the Competent Person (MGPS) is a member of a contractor’s staff, the contractor is responsible for assessing the competence of those staff and maintaining a register of Competent Persons (MGPS). Specialist contractors must meet the requirements set out in HTM 02-01 paragraph 3.56.

Where the Competent Person (MGPS) is a member of the Trust staff, the Authorised Person (MGPS) is responsible for assessing the competency of the Competent Person. In house Competent Persons must meet the minimum training standards set out in HTM 02-01 paragraphs 7.38 and 7.39.

8.4 The training and appointment requirements for Quality Controllers are set out in HTM 02-01 paragraphs 7.42, 7.59 and 7.60.

8.5 Designated Porters (MGPS) must have successfully completed appropriate training in the safe handling of cylinders, as set out in HTM 02-01 paragraph 7.46.

8.6 Nursing and other staff working with medical gas cylinders or piped medical gas systems should receive training as set out in HTM 02-01 paragraph 7.43.

8.7 Retraining and reassessment will be carried out in accordance with the following schedule:

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<tr>
<th>Personnel</th>
<th>Retraining</th>
<th>Reassessment</th>
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<tr>
<td>Authorising Engineer</td>
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<tr>
<td>Quality Controller</td>
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<td>Every 5 years</td>
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9. **MONITORING COMPLIANCE AND EFFECTIVENESS**

9.1 Monitoring arrangements for compliance and effectiveness:
- Monitoring will be by the Resuscitation Group for gas cylinders as there will be standing agenda items for resus equipment and Datix incidents. Monitory for PMGS will be by the Estates & Facilities Governance Group.

9.2 Responsibilities for conducting the monitoring:
- Ward/team managers shall be responsible for implementing a routine inspection of gas cylinders. A written record of visual checks of equipment and their expiry dates will be kept along with a list of staff trained in the safe storage, handling and transferring of the cylinders.
- They also have responsibility to ensure that staff working under their supervision use safe working practices when dealing with medical gas cylinders and their contents.

9.3 Methodology to be used for monitoring:
- Annual Report to Estates and Facilities Governance
- Health and safety audit
- Weekly checks and recording by ward staff
- Review of DATIX forms

9.4 Frequency of monitoring:
- Health and safety audit (annually)
- Resuscitation equipment audit, (at least annually).

9.5 Process for reviewing results and ensuring improvements in performance occur – report will be provided quarterly to Estates and Facilities Governance Group and any risk issues and areas of concern will be escalated to the ************ Governance Group

9.6 Audit results will be presented to the Estates & Facilities Governance Group for consideration, identifying good practice, any shortfalls, action points and lessons learnt. This Group will be responsible for ensuring improvements, where necessary, are implemented.

10. **REFERENCES**

10.1 **Cross reference to other procedural documents**
- Development & Management of Procedural Documents
- Learning Development and Mandatory Training Policy
- Risk Management Policy and Procedure
- Staff Training Matrix (Training Needs Analysis)
- Untoward Event Reporting Policy and procedure
All current policies and procedures are accessible in the policy section of the public website (on the home page, click on ‘Policies and Procedures’). Trust Guidance is accessible to staff on the Trust Intranet.

**Relevant Objective within Trust Strategy**

Five year Integrated Business Plan

11. **APPENDICES**

1.1 For the avoidance of any doubt the appendices in this policy are to constitute part of the body of this policy and shall be treated as such.
APPENDIX A

TRANSPORATION OF GAS CYLINDERS
THE CARRIAGE OF SMALL QUANTITIES OF GAS CYLINDERS ON VEHICLES

It is safe to carry gas cylinders on vehicles providing you follow some basic legal and safety requirements. This leaflet highlights the golden rules for transporting small numbers of gas cylinders on vehicles whilst at work. It also provides sound advice if you are carrying gas cylinders on a vehicle for personal use.

Anyone carrying gas cylinders on a vehicle in the course of their work has to comply with ADR. Full compliance with ADR is required to carry toxic or corrosive gases. There are exemptions for other gases if the number of gas cylinders being carried is under specified threshold limits, for example, if you are carrying 1 or 2 portable cylinders of medical oxygen. Carrying gas cylinders on a vehicle for personal use is exempt from ADR.

BCGA Guidance Note 27, Guidance for the carriage of gas cylinders on vehicles, provides further information on safely transporting gas cylinders, or other products, such as dry ice, in order to comply with ADR and provides a method for calculating the threshold quantity for any gas cylinders being carried.

Avoid the risks of fire by following the Golden Rules

Smoking

Never let anybody smoke in a vehicle when carrying gas cylinders. This includes everybody - not just the driver.

Ignition of a flammable gas following a leak could be catastrophic. Oxidising gases strongly support combustion.

Cryogenic liquefied gases

Take extra care with cryogenic liquefied gas containers. They continually vent cold gas (even when not in use) and could leak liquid if not kept upright. Transport in an open vehicle. For medical gases refer to BCGA Leaflet 13.

Keep your cylinders secure

Cylinder storage

Cylinders are to be securely stowed, preferably in the luggage area.

If involved in an accident you could be injured by unsecured items being thrown around inside the vehicle. Use a carrying bag or box, if provided, to help keep cylinders secure.

Ventilation

Ideally gases should be transported in an open vehicle. If this is not possible, make sure you have good ventilation to maintain a healthy environment inside the vehicle. The best way to improve ventilation is to open a window.

Fire

It is mandatory to carry a fire extinguisher if at work. The driver is to be trained in its use. A 2 kg dry powder extinguisher is the minimum requirement. Strongly recommended for personal use.

Cylinder security

Gas cylinders should be removed at the end of your journey. If left for short periods, then keep out of sight. Gas cylinders and associated equipment are attractive to opportunistic thieves.

All valves are to be closed

Ensure the valves are closed on all cylinders. Check there are no leaks. Disconnect and remove any ancillary equipment.
Driver responsibilities

Legal requirements
It is the driver’s responsibility to ensure their vehicle is safe. The driver should have appropriate training and knowledge about the gases being carried and understand the basic actions required in the event of an emergency.

Documents
The driver does not need to carry any special documents to transport small quantities of gas cylinders. However, it is useful to have the right information to assist the emergency services in the event of an incident. See ‘Helping the emergency services’.

Insurance for the vehicle
Make sure you have informed your insurance company that you are carrying gas cylinders on the vehicle.

Suspected gas cylinder leaks
If you suspect that there is a leak from your gas cylinder, take the following immediate actions:

- If driving, stop and park the vehicle as soon as practical in a safe place, away from naked flames and flammable substances. Turn off the ignition.
- Do not smoke or allow anybody to smoke in the vicinity of the vehicle.
- Check the cylinder valve. If it is open, close the cylinder valve immediately (if safe to do so).
- Increase the ventilation in the vehicle. Open all doors, windows, luggage areas etc.
- If you have a liquid leak. Do not touch the liquid it will give you cold burns.
- If the cylinder continues to leak, and it is safe to do so, remove the leaking cylinder from the vehicle and place in a safe, well-ventilated area. Consider notifying the emergency services.
- Ensure that the vehicle has been adequately ventilated before continuing with the journey.
- If you cannot stop the leak, do not return a leaking cylinder onto the vehicle.

If additional help is required, contact your gas supplier for advice.

Helping the emergency services
The emergency services attending an accident or incident should be advised that the vehicle is carrying dangerous goods.

They will want to know what gases you are carrying, whether you have cylinders, cryogenic liquid or both, their quantity, size and location in the vehicle. It is recommended that you carry a Safety Data Sheet for each product.

The law
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations regulates the transport of dangerous goods in the UK and implements the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR).

ADR provides a framework for dangerous goods to be carried internationally on road vehicles subject to compliance with standards for the packaging and labelling of the dangerous goods, and appropriate construction and operating standards for the vehicles and crew.

The ADR regulations are intended to protect everyone who is either directly involved, or who might become involved (such as members of the emergency services and the public) in the carriage of dangerous goods by road. Gases are classified as Class 2 dangerous goods.