
Medical Gas Operational Policy

Please be aware that any printed version of this Policy may NOT be the latest version. Staff are reminded that they must always refer to the Intranet for the latest version

Purpose of Agreement	To put in place measures for Solent NHS Trust to ensure the safe use of medical gases and to reduce any risks associated with each gas.
Document Type	Policy
Reference Number	Solent NHST/Policy MMT024
Version	Version 3
Name of Approving Committees/Groups	Solent NHS Trust Medicines Management Group, Policy Steering Group, Clinical Executive Group
Operational Date	November 2019
Document Review Date	March 2023
Document Sponsor (Job Title)	Chief Pharmacist
Document Manager (Job Title)	Medicines Management Pharmacist Health and Safety Manager Senior Estates Maintenance Manager
Document developed in consultation with	Solent NHS Trust Medicines Management Group and Policy Steering Group
Intranet Location	Business Zone > Policies, SOPs and Clinical Guidelines
Website Location	Publication Scheme
Keywords (for website/intranet uploading)	Medical Gases, Gases, Oxygen, Entenox, Medical Air, Cryogenic Liquids, Policy, MMT024

Amendments Summary

Amend No.	Issued	Page (s)	Subject	Action Date
1	February 16	Various	Review due to policy time frame and operational changes inclusive of Job titles/ responsibilities	February 2019
2	March 2019	Various	Review due to policy time frame, success and monitoring criteria changed to capture monitoring tool. Re formatted to new policy criteria, additional roles and responsibilities added and adapted. Addition of piped medical gases used in Dental Service. Addition of appendix relating to ordering of replacement gas cylinders	March 2019

Review Log

Version Number	Review Date	Name of reviewer	Ratification Process	Reason for amendments
1	February 2019	Chief Pharmacist	Assurance Committee	
2	March 2019	Health and Safety Manager and Medicines Management Pharmacist	Trust Management Team Meeting	
3	November 2022	Luke Groves	Chair's action – approved extension request to March 2023 to allow time for relevant Medical Gas colleagues to update appendices with key updates	No changes made to policy

EXECUTIVE SUMMARY

Medical gases form an important part of the treatment of many patients within the Trust across a range of specialties. The medical gases that are used within the Trust are medical oxygen, entenox (a mixture of 50% nitrous oxide and 50% oxygen), medical air and cryogenic liquids.

Medical gases are most often stored within, and delivered to the patient from, pressurised gas cylinders provided by the Trust's medical gas contracted supplier. Each medical gas cylinder has a pressure reduction valve and flow meter incorporated into the cylinder design. This ensures that the medical gas can be delivered safely to the patient from the cylinder via appropriate tubing and nasal cannulae or mask.

For the 5 sites where there are Trust in-patients, there is a medical gas store where ready to use cylinders, and used cylinders waiting for collection by the contractor, are stored in a safe and secure environment. The design, positioning, layout and use of medical gas stores is subject to specific conditions and criteria as laid out in HTM 02-01 and the Trust audits its stores on an annual basis to ensure compliance. Wards and services on these sites can obtain replacement full cylinders in exchange for empty or part used cylinders by contacting the porters or facilities department on that site. Sites without a medical gas store maintain sufficient stock of medical gas cylinders for immediate use, but arrange delivery of replacement supplies directly from the contracted supplier.

In addition to medical gas cylinders, on some sites Medical Gas Pipeline Systems (MGPS) deliver commonly used gases from a vacuum storage vessel or large storage cylinders to patient's bedside. The MGPS is maintained by contractors on behalf of NHS Property Services and they maintain all the required functions of the accredited Authorised Person for MGPS.

Medical oxygen is the most commonly used medical gas. It is administered to patients across a range of specialities to provide additional oxygen to the lungs and thereby increase the availability of oxygen to the body tissues. When used appropriately it is life-saving and part of the treatment of many critical conditions. However, if used incorrectly it may cause serious harm. For use in patients, it must be prescribed with a target oxygen saturation level that treatment is trying to achieve. A small cylinder of medical oxygen is included in each of the Trust's standard emergency bags for use in emergency situations. Any member of staff who has undertaken DART training may administer oxygen in an emergency situation.

Entenox is used for relief of pain. It is self-administered by the patient using a mouthpiece or mask attached to an on-demand valve. Medical air is used on occasions in anaesthesia as a carrier gas for a volatile anaesthetic agent or as a power source for pneumatic equipment, e.g. nebulisers.

Cryogenic liquids are used within services because of their rapid effect in freezing tissues that need to be removed. They are hazardous because of their extremely low temperature on application and where used incorrectly will cause cold burns or frostbite.

All staff who prescribe or administer or are involved in the storage, transportation and supply of medical gases receive training in their specific tasks relating to medical gases and must be able to demonstrate competence in conducting those tasks.

Table of Contents – Medical Gas Operational Policy

Section Number	Subject	Page Number
	Executive Summary	3
1	Introduction and Purpose	5
2	Scope and Definitions	5
3	Medical Gas Cylinders	6
4	Ordering Medical Gas Cylinders and Inventory Control	6
5	Storage of Medical Gas Cylinders	7
6	Handling of Medical Gas Cylinders	8
7	Use of Medical Gas Cylinders	9
8	Medical Gases Piped Systems (MGPS)	9
	Use of Medical Oxygen from the MGPS	10
	Ordering of Medical Oxygen for the MGPS	11
9	Prescribing and Administering Medical Gases	11
	Medical Oxygen	11
	Entonox (Mixture of 50% Nitrous Oxide and 50% Oxygen)	13
	Medical Air	14
	Cryogenic Liquids	14
10	Roles and Responsibilities	15
11	Training	16
12	Equality & Diversity and Mental Capacity Act	17
13	Success Criteria and Monitoring Policy Effectiveness	17
14	Review	17
15	References and Links to Other Documents	18
16	Glossary and Definitions	18
Appendix 1	Equality Impact Assessment Form	20
Appendix 2	Guidance on Giving Oxygen and Oxygen Saturation Levels	22
Appendix 3	Oxygen Administration Systems	23
Appendix 4	Reordering Process for Medical Gas Cylinders	27
Appendix 5	Medical Gas Compound Assessment Tool	31
Appendix 6	Storage Facilities Assessment Form	34

1. INTRODUCTION & PURPOSE

- 1.1 This policy sets out the standards which Solent NHS Trust expects its directly and indirectly employed staff to adhere to when involved in any way with medical gases. For medical gas cylinders it concerns their storage, transportation, handling and supply. It applies to all staff who use or maintain Medical Gas Pipeline Systems (MGPS) and related equipment as defined in Health Technical Memorandum 02-01: 2006 Part A and Part B. It also applies to medical compressed air and cryogenic liquids and the clinical use and administration of all medical gases.
- 1.2 The policy takes account of current legislation, official guidance and recommendations. These, however, change with time and all staff have a responsibility to identify where new guidance may conflict with this policy.
- 1.3 The policy lays out the key principles for the care and control of medical gases. Individual services may then develop local procedures within this framework in consultation with the Chief Pharmacist. Any local procedure must be approved by the relevant associate director, senior practitioner or other suitable professional and the Chief Pharmacist via the Solent NHS Trust Medicines Management Group.
- 1.4 Medical gases are licensed medical products that are used for a variety of purposes in caring for patients. They are provided to the Trust's various settings by contracted suppliers in the form of small and medium sized cylinders, large cylinders that are used in a manifold room (a room used for holding cylinders) for piped gas systems, liquid containing cylinders (liquid oxygen) or cryogenic gases in liquid form to freeze tissues. All personnel working with medical gases must be suitably trained before they can handle and/or administer these gases to patients.

2. SCOPE & DEFINITIONS

- 2.1 This policy applies to permanent and fixed term contract employees (including apprentices) who hold a contract of employment or engagement with the Trust, and secondees (including students), bank and locum staff, volunteers (including Associate Hospital Managers), Non-Executive Directors and those undertaking research working within Solent NHS Trust, in line with Solent NHS Trust's Equality, Diversity and Human Rights Policy.
- 2.2 The policy covers all aspects of prescribing, supply, administration and storage of medical gases in community hospitals, community clinics and other departments and settings where Solent NHS Trust provides care. It is an important aspect in the treatment of clients receiving care provided by the organisation.
- 2.3 The policy also gives advice to Trust staff who are involved in the care of patients in their own home, on the safe use of medical gases.
- 2.4 The policy does not give detailed instructions on the use of administration equipment associated with use of medical gases.

3. MEDICAL GAS CYLINDERS

- 3.1 For most settings in Solent NHS Trust (even services hosted on sites not owned by the Trust), medical gases are provided in cylinders that are stored on site and transported to the area of use when required, for example, oxygen cylinders used in an emergency situation. Cylinders are labelled according to their size; size A being the smallest and size J the largest. The largest cylinders are designed to be attached to gas manifolds to serve piped medical gas systems. Small and medium size cylinders (commonly CD and HX) are used for individual patient care and are provided with an integral valve and flow meter.
- 3.2 Medium and large sizes of medical gas cylinders are very heavy and can cause harm to patients. An alert was issued in July 2010 informing organisations of the risks - EFA/2010/008 (Unsecured medical gas cylinders, including cylinders on trolleys). In response to this, all F, HX and G size cylinders must only be used at the bedside of those patients requiring continuous oxygen, and must be firmly secured in a suitable trolley. Secured cylinders must be placed to ensure that a patient cannot use the cylinder as a support when moving or rising from bed.
- 3.3 Large size cylinders (size G and above) must only ever be moved (whether full or empty) with the aid of a suitable trolley and/or hoist.
- 3.4 Each setting (ward, clinic or manifold room) within the Trust must have a set stock holding of medical gas cylinders. This can range from an agreed small number of portable oxygen cylinders for emergency use, through to larger set numbers of large cylinders as back up for a manifold. Service managers, in conjunction with the Chief Pharmacist, must regularly review stock levels of cylinders to ensure that sufficient are being kept for patient care.

4. ORDERING MEDICAL GAS CYLINDERS AND INVENTORY CONTROL

- 4.1 The service lead for each setting that uses medical gases (ward, clinic, manifold room) must designate a suitably competent person with the responsibility for monitoring medical gas cylinders and ordering replacement cylinders to maintain stock levels.
- 4.2 The most common requirement for medical gas stock within Solent NHS Trust is oxygen for emergency use. Oxygen cylinders are checked as part of the regular check of emergency drugs and it is essential that medical gas cylinders are replaced before they are empty and are in place ready for the next potential emergency situation Full details of how to arrange replacement oxygen cylinders for emergency bags is given at appendix 4.
- 4.3 Medical gas cylinders remain the property of the contracted supplier and are rented by the Trust. So while it is essential that adequate supplies are kept as stock, it is also important that settings do not maintain excess stock.
- 4.4 Wards and departments within the Trust must reorder medical gas cylinders on an empty (or part used) cylinder replaced with a full cylinder basis. This will ensure that set stock levels are maintained.

- 4.5 For wards and departments that have a medical gas cylinder store on site (Royal South Hants, St James's, Western Community, Jubilee House and St Mary's Hospitals) replacement for empty, part used or out of date cylinders is arranged by contacting the porters/facilities staff. They will arrange delivery of a full cylinder from the medical gas store and pick up of the used cylinder direct to/from the ward or department. Facilities staff will maintain a record of cylinders delivered to each setting.
- 4.6 Porters/Facilities staff will arrange collection of used cylinders from the medical gas store and delivery of full cylinders to the store with the medical gas contractor on a regular (usually weekly) basis.
- 4.7 For settings remote from the these inpatient sites listed in 4.5 above, replacement for empty or part used or out of date cylinders is arranged by contacting the medical gas contractor direct who will deliver replacements at the next available opportunity. Medical gas cylinders must not be supplied between sites using Trust transport or staff cars.
- 4.8 Urgent orders for replacement of medical gas cylinders may be placed with the medical gas contractor. However, if a shortage of a medical gas might compromise the treatment of a patient, treatment must either cease or consideration be given to transferring the patient to Emergency Department by ambulance.
- 4.9 Community based nurses may, if necessary, carry a single portable oxygen cylinder for emergency treatment in their cars. All cylinders must be fixed securely during transportation or placed within the foot well of their car. There is no requirement to display a HAZChem Notice. Transport of any other medical gases or other sizes of oxygen cylinder must be done in a specifically designated vehicle and is restricted to medical gas delivery companies and Trust contracted transport.
- 4.10 It is important that medical gas cylinders are not supplied from the Trust to any setting outside of the Trust or to patients at home. Likewise there must be strict adherence to full for empty ordering from the medical gas contractor. The Trust will be liable for on-going rental of all cylinders supplied to it, regardless of where they are used, and will be liable for a cylinder charge for lost cylinders.

5. STORAGE OF MEDICAL GAS CYLINDERS

- 5.1 When stored in a medical gas store on the five inpatient sites, cylinders must be stored separately from any non-medical gases in a dedicated area which must be designed to the requirements of HTM 02-01. Cylinders must be under cover in a secure lockable area away from any stocks of combustible materials and sources of heat. Warning notices prohibiting smoking and naked lights must be posted on the cylinder store clearly visible to all.
A Medical Gas Compound Assessment tool is included at Appendix 5. Regular (annual) checks against the assessment must be made to ensure medical gas cylinder storage complies with the appropriate standards.
- 5.2 The store must provide adequate space to allow segregation of cylinders of different gases as well as full and empty cylinders. It must also be large enough to allow easy access for stock

examination and cylinder stock rotation. Full cylinders must be used in strict rotation according to expiry dates and expired cylinders must be stored with empty cylinders awaiting collection by contractor. F size cylinders and larger must be stored upright and held by safety chains. E size cylinders and smaller must be stored horizontally on racks.

- 5.3 Cylinders in all clinical areas (wards or clinics), when not in use, must be stored either in the Resuscitation Bag (small CD size cylinders used in emergencies), or on a secure trolley or suitable rack in a well-ventilated “parking” area that will not block doorways or fire exits.
- 5.4 A check must be made of small CD size cylinders in resuscitation bags on a regular weekly basis as part of My Kit Check of all emergency medicines and equipment. The cylinder must be in date and be at least three quarters full. If this is not the case, the cylinder must be replaced.
- 5.5 For all other medical gas cylinders stored on a ward or department regular (annual) checks against the Storage Facilities Assessment Form must be made to ensure medical gas storage complies with the appropriate guidance. The Storage Facilities Assessment Form is included at Appendix 6.
- 5.6 In the case of clinics and settings outside of the main hospital sites, the most senior clinical manager must consider the type of intervention being carried out and have emergency oxygen in a Resuscitation Bag available if deemed necessary. The expiry date and quantity of gas in each cylinder must be checked weekly by the senior clinical manager, though they may delegate this task to another suitably trained member of staff if required.

6. HANDLING OF MEDICAL GAS CYLINDERS

- 6.1 All personnel handling medical gas cylinders must receive regular manual handling training in line with the statutory and mandatory training matrix and if porters are transporting cylinders they must complete the transportation of medical gas cylinders section only via the online training provided by BOC
- 6.2 Cylinders must be handled with care, never knocked violently or allowed to fall over.
- 6.3 Large and medium sized cylinders must only be moved with the appropriate size and type of trolley. The cylinder valve must always be closed when moved.
- 6.4 As per paragraph 3.2, when in use medium and large size cylinders must be firmly secured to a suitable cylinder support or trolley.
- 6.5 Never roll cylinders along the ground as this may cause the valve to open accidentally. It may also damage the integrity of the cylinder and cylinder label and paintwork.

7. USE OF MEDICAL GAS CYLINDERS

- 7.1 If a cylinder is found to be faulty (e.g. faulty valve operation, damaged valve outlet or minor leaks from valve) the cylinder must be isolated in the cylinder store and marked faulty and the supplier contacted for advice.
- 7.2 When using medical gas cylinders it is most important that no part of the cylinder valve or equipment is either lubricated or contaminated with oil or grease.
- 7.3 Before use ensure that:
- the correct cylinder is selected for the gas required and administration of the gas.
 - the cylinder contents are checked to ensure that sufficient gas is available for the required use.
 - the cylinder is in date.
- 7.4 The cylinder must be prepared for use as follows:
- if present, remove the disposable seal by pulling the tear tag and discard.
 - check for signs of oil or grease on the cylinder valve. If present clean the cylinder valve and head gear before use.
 - attach appropriate required tubing and/or administration equipment
 - open the cylinder valve slowly by the handwheel.
- 7.5 Cylinders must be checked while in use to ensure that leaks of gas are not occurring, by listening for hissing sounds of escaping gas from any connections within the system. If leaks are suspected, tighten any connections and check for leaks again. If a leak persists, obtain a replacement cylinder and return the faulty cylinder to the medical gas contractor.
- 7.6 After use ensure that:
- the cylinder valve is closed immediately.
 - equipment used to administer the gas is removed from the cylinder.
 - cylinders are returned to the ward/clinic parking area designated for medical gas cylinders.
 - a full for empty replacement of used or part used cylinders (with insufficient for further use) is arranged immediately.

8. MEDICAL GAS PIPED SYSTEMS (MGPS)

- 8.1 Medical Gas Pipeline Systems (MGPS) deliver medical gases directly to the patient's bedside from either a liquid gas container or from large medical gas cylinders attached to a manifold in a remote part of a site. Where a liquid gas container is used the container is known as a vacuum insulated evaporator (VIE) and uses the gradual warming and evaporating of the liquid gas to pressurise the MGPS and deliver the medical gas to the patient.
- 8.2 National Guidance recommends that medical gas cylinder usage should be minimised in a ward environment and wherever possible MGPS should be used to deliver medical gases to patient's bedsides. However, comparatively low usage of medical gases within the Trust makes extension of MGPS unnecessary and unviable, though this must be kept under review by the Chief Pharmacist and Senior Estates Maintenance Manager.

- 8.3 MGPS is available at the Royal South Hants Hospital to deliver oxygen from a liquid gas VIE and in the Poswillo Centre for use by the Dental Service.
- 8.4 The management and maintenance of MGPS can only be undertaken by designated staff that have undertaken specific training to become either an Authorised Person or a Competent Person for Medical Gas Pipeline Systems. For the MGPS all duties relating to management and maintenance are the responsibility of the landlord (NHS Property Service) who has appointed a contractor to manage the MGPS and, is therefore, outside of the direct remit of any Solent NHS Trust staff. However the Trust's Medical Gas Committee will monitor the appointed contractors to ensure that appropriate maintenance is being carried out. The appropriate maintenance of the MGPS and delivery of medical gases of the correct quality to Solent NHS Trust patients must be included in any contract for the MGPS servicing.
- 8.5 When either planned maintenance or emergency repair work is arranged on the MGPS, the representative of the contractor for the work will contact the senior practitioner on duty for each Solent in-patient ward and/or clinic area to be affected. The senior practitioner will need to make alternative arrangements for administration of medical gases to patients (i.e. sufficient supply of medical gas cylinders) and will be required to sign the contractor's permit to work on the MGPS once patient care has been secured. A senior practitioner for each ward or clinic area will also be required to take certain actions in the event of an emergency, for example isolation of oxygen supply in the event of fire.
- 8.6 Specific regulations govern the siting of the VIE and the warming of the gas before it reaches the patients. Observance of these regulations falls within the remit of the accredited Authorised Person (AP) appointed by the NHS Property Services approved contractor.
- 8.7 If for any reason the piped medical gas system is not working:
- Contact the senior practitioner on the ward or clinic at the hospital, who must then telephone the NHS Property Services who will then contact the contractor for the MGPS to arrange repair.
 - Use medical gas cylinders as described above until instructed to recommence using the piped medical gas system.
- 8.8 Even if piped oxygen is available at the patient's bedside, it is important that each ward has emergency cylinders of oxygen available for transporting patients and/or for use in areas where piped oxygen is not provided (e.g. treatment rooms).
- 8.9 Failure of the VIE will cause oxygen delivery to automatically switch to delivery from the manifold to which are attached large size oxygen cylinders. Repair or replacement of the VIE can then be arranged by contractors of NHS Property Services.

USE OF MEDICAL GASES from the MGPS

- 8.10 Only competent trained practitioners may administer medical gases to a patient for whom they are prescribed. To use medical gases for a patient served by the MGPS:
- insert the correct valve into the wall port.
 - attach appropriate required tubing and/or administration equipment

- open the valve slowly by the handwheel.
- 8.11 The system of delivery of medical gases to the patient must be checked for leaks while in use, by listening for hissing sounds of escaping gas from any connections within the system. If leaks are suspected, tighten any connections and check for leaks again.
- 8.12 After use ensure that:
- the valve is closed immediately. It is important that delivery of oxygen ceases when no longer needed because to leave it running will be wasteful and present an increased fire risk.
 - equipment used to administer the gas is removed from the wall port.

ORDERING OF MEDICAL GASES FOR THE MGPS

- 8.13 Liquid oxygen is delivered to the VIE by the medical gas contractor according to an agreed timetable. Large sized medical gas cylinders for a manifold are delivered on request by the medical gas contractor. Urgent additional supplies can be arranged if necessary. All arrangements for ordering are made by NHS Property Services.

9. PRESCRIBING AND ADMINISTERING MEDICAL GASES

Medical Oxygen

- 9.1 Oxygen is one of the most common medicines used in patient care. It is administered to patients across a range of specialties to provide oxygen to the lungs and thereby increase the availability of oxygen to the body tissues. If used appropriately, oxygen is life-saving and part of first-line treatment in many critical conditions. However, if used incorrectly it may cause serious harm or even death. The most common reasons for oxygen therapy include:
- Acute hypoxaemia (e.g. pneumonia, shock, asthma, heart failure, pulmonary embolus).
 - Ischaemia (e.g. myocardial infarction, but only if associated with hypoxaemia).
 - Severe anaemia.
 - Pneumothorax.
 - Post operative state (general anaesthesia can lead to decrease in functional residual capacity within the lungs resulting in hypoxaemia).
 - A number of long term conditions.
- 9.2 Oxygen must be prescribed and/or used in accordance with current British Thoracic Society guidelines. For the purposes of saving life, in an emergency, oxygen must always be given immediately and documented later.
- 9.3 **Oxygen Used in Emergency Situations**
- a. When not prescribed but required in an emergency, any member of staff who has undergone appropriate training in basic life support, may administer oxygen to a critically ill patient, in accordance with the Management of Resuscitation Policy.
 - b. Oxygen administered in an emergency must be documented in the patient's notes alongside any other emergency treatment provided.

- c. All patients who have had a cardiac or respiratory arrest should have 100% oxygen provided along with basic/advanced life support.
- d. All peri-arrest and critically ill patients should be given 100% oxygen (15 l/min non-rebreathable reservoir mask) if oxygen saturation is less than 94% or no saturation measure is available, whilst awaiting immediate medical review.

9.4 Prescribing and Administering Oxygen

- a. Prescriptions for oxygen must be clearly written on the prescription chart indicating the target saturation required rather than the specific dose to be administered. The method of delivery must be specified and therapy will be given to achieve the saturation required.
- b. A target saturation of 94-98% is used for most acutely unwell patients (92-94% if aged 70 years old or more) or 88-92% for those with COPD or at risk of hypercapnic respiratory failure. Note that for patients of all ages, there may be transient dips in saturation levels during sleep to as low as 84%. Patient's oxygen saturation must be recorded in the patient's notes. Guidance on identifying appropriate saturations for patients as provided by the British Thoracic Society is in Appendix 2.
- c. Only appropriately trained practitioners can administer prescribed oxygen to patients.
- d. Before administering oxygen to a patient, the practitioner must confirm the identity of the gas by connecting to the correct wall port, or identifying the gas cylinder. If medical gas cylinders are used, the practitioner must also check the expiry date of the gas and ensure that adequate supplies of oxygen are available to maintain the flow rate prescribed.
- e. Appropriate monitoring devices, including pulse oximetry, must be used to achieve the target saturation prescribed. All patients must have their oxygen saturation observed for at least 5 minutes after starting oxygen therapy and at regular intervals thereafter. Oxygen flow rate must be adjusted to keep within the target saturation range. Oxygen flow rates and saturation rates must be recorded on the bedside observation chart.
- f. Any sudden change in oxygen saturation rates must be referred to a doctor, as must any deterioration in the patient's condition.
- g. When oxygen is no longer required by a patient, it must be crossed off the prescription chart by the prescriber along with the date of discontinuation.
- h. Accurate documentation of flow rates and target saturations achieved must be recorded in the patient's notes.

9.5 Precautions/Hazards/Complications of Oxygen Therapy

- a. In patients with chronic carbon dioxide (CO₂) retention, oxygen administration may cause further increases in carbon dioxide and respiratory acidosis. This may occur in patients with COPD, neuromuscular disorders, morbid obesity or musculoskeletal disorders. There are several factors, which lead to the rise in CO₂ with oxygen therapy in patients with hypercapnic respiratory failure, and details are in the BTS guideline available at: <https://www.brit-thoracic.org.uk/standards-of-care/guidelines/bts-guideline-for-emergency-oxygen-use-in-adult-patients/>
- b. Drying of nasal and pharyngeal mucosa
- c. Oxygen toxicity
- d. Absorption atelectasis
- e. Skin irritation
- f. Fire hazard (NB. Medical oxygen is highly dangerous in the presence of oils, greases, tarry substances and many plastics due to the risk of spontaneous combustion with high pressure)

gases. Therefore patients on medical oxygen who require an emollient should not use any paraffin based product

Medical Oxygen in the Patient's Own Home

- 9.6 Oxygen must not be supplied to patients for use in their own home from any of the Solent NHS Trust Hospital or community settings. If required for home treatment, a referral should be made to the local home oxygen service.
- 9.7 Solent NHS Trust staff attending patients at home may provide advice on the safe and secure use of oxygen, if required, in line with information given within this policy. Further information can be obtained from the Trust's Medicines Management Team.

Entonox (Mixture of 50% Nitrous Oxide and 50% Oxygen)

- 9.8 Entonox is used exclusively for the relief of pain.
- 9.9 Nitrous Oxide begins to separate out from the gas mixture if the temperature falls below about -6°C. A homogenous mixture is again obtained when the temperature is raised to above 10°C and the cylinder is agitated. Therefore, before use, to ensure it is properly mixed, cylinders must be stored horizontally for 24 hours at a temperature above 10°C. If this is not practicable, before use the cylinders must be maintained at a temperature above 10°C for at least 2 hours and then completely inverted 3 times.
- 9.10 Entonox is highly dangerous when in contact with oils, greases, tarry substances and many plastics due to the risk of spontaneous combustion with high pressure gases.
- 9.11 While Entonox can be prescribed for patients, it is generally used in clinic areas where treatment causes short term moderate to severe pain. In such cases, suitably trained and authorised practitioners administer Entenox. Administration of Entenox must be documented in the patient's notes.
- 9.12 Before a patient undergoes a procedure that might necessitate use of Entenox, it is important that the trained practitioner responsible for administration checks that there is a sufficient amount of gas in the cylinder to provide analgesia throughout.
- 9.13 Entonox is self-administered by the patient and so it is important to ensure the patient understands how the apparatus works to produce analgesia. The dose required for analgesia depends on the amount of gas inhaled. Its effects are apparent within four to five breaths reaching maximum effect within about two to three minutes of inhaling the gas.
- 9.14 The gas flow stops when the patient removes the mouthpiece or mask. Overdosing does not occur since continued administration leads to light anaesthesia, causing the mask or mouthpiece to drop away as the patient relaxes.
- 9.15 Administration of Entonox must be documented in patient's notes.

Medical Air

- 9.16 Like atmospheric air, Medical Air contains 21% oxygen. It is used:
- in anaesthesia as a carrier gas for volatile anaesthetic agents.
 - as a power source for pneumatic equipment.
- 9.17 While it is medical product, medical air does not require a prescription for it to be used. However, only practitioners trained to give volatile anaesthesia or trained to use equipment powered by medical air (e.g. nebulisers) may use medical air. Its use must be documented in the patient's notes.
- 9.18 Medical air is usually administered from medical gas cylinders via self-contained or compressed air line breathing apparatus ending in a face mask for delivery to the patient.
- 9.19 Medical air is contra-indicated when oxygen or other gaseous combinations are required. Utmost care must be taken to avoid using medical air when oxygen has been prescribed.

Cryogenic Liquids

- 9.20 The cryogenic liquids used within the Trust are:-
- Liquid Nitrogen – nitrogen gas from the atmosphere cooled to below its boiling point of -196°C. Liquid nitrogen can only be kept in specially designed vacuum insulated containers (dewars) for it to remain in liquid form.
 - Cryogenic Devices – nitrous oxide or other inert gas under pressure within a cryogenic device which, when activated, provides a small amount of liquid at a very cold temperature in a pen device ready for administration.
- 9.21 Liquid nitrogen is available from the contracted cryogenic liquid supplier delivered according to a pre-agreed schedule. Delivery will require access of the liquid nitrogen dewar at the roadside in order to allow direct topping up from the vacuum insulated container on the delivery vehicle. Cryogenic pen devices are available pre-loaded directly from their suppliers.
- 9.22 Cryogenic pen devices may be stored with no particular constraints in their pre-activated state. The liquid nitrogen dewar must be stored in a well-ventilated secure area and must only be accessed by persons trained in handling and using cryogenic gases.
- 9.23 Extreme care must be taken when handling cryogenic liquids. There are two main hazards with their use:-
- a. Cold burns or frostbite when they come into contact with skin or mucous membranes.
 - b. Asphyxiation due to high concentrations and the displacement of oxygen in the atmosphere.
- In the event of exposure of anyone to either of these effects, prompt medical attention is required. Personal Protective Equipment (PPE – loose fitting cryogenic gloves, eye goggles or full face shield, appropriate closed shoes) must be worn when handling or transferring liquid nitrogen.
- 9.24 Cryogenic pen devices come ready to use (other than for activation) and no transfer of liquid is required prior to use. Liquid nitrogen will require transfer from its storage dewar into an administration device, which is similarly insulated, prior to use. Transfer must only be performed

by staff trained in handling liquid nitrogen and who have the appropriate personal protective equipment.

- 9.25 There is no requirement for cryogenic liquids to be prescribed, but their use must be fully documented in the patient's notes. Patient assessment and administration of the cryogenic liquid must only be undertaken by practitioners trained in the use of these liquids and who are fully aware of the risks.
- 9.26 Liquid nitrogen remaining in the vessel at the end of the clinic must be allowed to evaporate from the container. It must never be poured out of the container.
- 9.27 Requests to supply cryogenic liquids from outside the Trust (e.g. by GP surgeries) must be declined, but information on suppliers can be provided.

10. ROLES & RESPONSIBILITIES

- 10.1 **The Chief Executive Officer** has overall responsibility for all matters of risk management; this includes Medical Gas usage activities within the Trust. The Chief Executive Officer will also have overall responsibility for ensuring that sufficient resources are provided to enable the policy to be implemented and to remain effective
- 10.2 **The Chief Operating Officers, Chief Medical Officer and Chief Nurse, Operational Directors and Clinical Directors**, on behalf of the Chief Executive Officer, will ensure that clinicians and their practice comply with this policy.
- 10.3 **Service managers and modern matrons** will ensure that:
- The policy is available to all employees for whom they are responsible, who handle medical gases.
 - Employees are supported in the identification of training and development needs and have access to training on medical gases if required.
 - Staff involved in any aspect of medical gas use understand their responsibilities and are competent to undertake those responsibilities.
 - Facilities and equipment are available to promote safe use of medical gases and are maintained to the required standards.
 - Risk assessments are undertaken for using medical gases.
 - Systems for reporting incidents and accidents involving medical gases, routine audit, review of adverse events and patient complaints are in place.
- 10.4 **Chief Pharmacist** is responsible for monitoring this policy and advising on best and current evidenced-base practice.
- 10.5 **Employees** who handle or use medical gases must:
- Comply with this policy.
 - Follow all information, instruction and training provided.
 - Use equipment safely and appropriately.
 - Take an active role in promoting safety both to the recipients of gas therapy and other members of staff.

- Report all incidents, accidents or “near misses” in accordance with the Incident Reporting Policy.

10.5.1 It must be recognised that compliance with this policy does not override any individual responsibility of healthcare workers to ensure that:

- Their practice complies with current legislation.
- They follow guidance issued by the Department of Health, professional bodies (e.g. Nursing and Midwifery Council, General Pharmaceutical Council) or other government departments such as the Home Office.
- They manage the risks to patients.

10.6 The Medicines Management Group is responsible for monitoring medical gases, training in medical gases provided for Trust employees and any incidents related to medical gas use. The Medical Gas Group, meeting at least every 6 months, oversees all aspects of medical gas use within the Trust and reports directly to the Medicines Management Group. The Medicines Management Group will have a standard agenda item to cover matters related to medical gases and will assess if any necessary action plans are to be drawn up.

10.7 Health and Safety Manager is responsible for undertaking on an annual basis the Solent NHS Trust Estates Medical Gas Compound assessment. Findings are to be fed back to the estates and facilities department.

11. TRAINING

11.1 With regards to medical gases, employees must receive training where appropriate in the following areas:

- Explanation of medical gases, their properties and their clinical uses
- Administration of medical gases
- Medical gas cylinders identification and labelling
- Cylinder storage and handling
- Dealing with faulty cylinders and other equipment
- Fire and explosion risk associated with medical gases
- Practical use of cylinders
- MGPS and associated equipment, including flow meters
- Training in the handling of cryogenic liquids

11.2 Training on the use and transportation of medical gas cylinders is provided by access to online training provided by BOC (medical gas contractor) which is arranged through and supported by the Trusts Learning and Development Department. The two modules for this training meet National criteria and can be accessed via the e-learning catalogue on an individual’s e-learning home page. Other training on specific elements on the safe use of medical gases is arranged by service managers via the Learning and Development Department and the usual application process. Attendance of staff at training must be recorded and monitored by service managers.

11.3 Though the responsibility for training staff to act as Authorised Person for the MGPS remains with their employer, Solent NHS Trust must ensure that the MGPS is being maintained by

competent and suitably trained and qualified staff via suitable clauses within the contract between the two Trusts.

- 11.4 All medical gas training must be recorded on the Organisational Learning Module database against individual staff records. Training courses available include BOC Medical Gases for Nurses, BOC Medical Gases for Porters and Introduction to Anaesthetics – Equipment Essentials.

12. EQUALITY IMPACT ASSESSMENT AND MENTAL CAPACITY

- 12.1. A thorough and systematic assessment of this policy has been undertaken in accordance with the Trust's Policy on Equality and Human Rights.
- 12.2. The assessment found that the implementation of and compliance with this policy has no impact on any Trust employee on the grounds of age, disability, gender, race, faith, or sexual orientation. Refer to Appendix 1.

13. SUCCESS CRITERIA / MONITORING EFFECTIVENESS

- 13.1 The responsibility for monitoring this policy will be vested in the Chief Pharmacist.
- 13.2 The effectiveness of this policy will be reviewed by the Medical Gas Group and will be discussed prior to the stipulated review timeframe at the Medicines Management Group meeting. Details of these discussions will be documented in the minutes.
- 13.3 The policy will also be monitored through various other methods including adverse incident reporting, significant event review and other medicines management audits.
- 13.4 The Trust Management Team Meeting will be responsible for overseeing risk management and clinical or corporate governance issues.
- 13.5 The annual assessment of the internal and external gas storage compounds areas will be collated and reviewed by Estates and Facilities Department.
- 13.6 Regular (annual) checks against the Assessment Form must be made to ensure medical gas storage complies with the appropriate guidance. Checks will be made by the Health and Safety Manager or nominated deputy and will be reported to Estates and Facilities and the Medical Gas Group.

14. REVIEW

- 14.1 This document may be reviewed at any time at the request of either at staff side or management, but will automatically be reviewed 3 years from initial approval and thereafter on a triennial basis unless organisational changes, legislation, guidance or non-compliance prompt an earlier review.

15. REFERENCES AND LINKS TO OTHER DOCUMENTS

NPSA Rapid Response Report NSSA/2009/RRR006 Oxygen Safety in Hospitals
DH Estates and Facilities Division (2006) Health Technical Memorandum 02-01 Medical Gas Pipeline Systems Part A and B
BOC Medical booklet - Gas Safe - with Medical Gases
BOC Medical Gas Data Sheet for Medical Oxygen
BOC Entonox Data Sheet
BOC Medical Air Data Sheet
Health and Safety Executive leaflet – Take Care with Oxygen HSE8 Reprinted 2/08
British Thoracic Society Guidelines for Oxygen Use in Healthcare and Emergency Settings 2017
BOC Care with Cryogenics Leaflet
BOC Liquid Nitrogen Safety Data Sheet
BOC Liquid Oxygen Safety Data Sheet
Health and Safety at Work Act 1974
Unsecured medical gas cylinders, including cylinders on trolleys EFA/2010/008 July 2010
Relevant Health and Safety policies, e.g. COSHH
The Palliative Care Handbook, latest edition
Medicines Management and Safety Policy

16. GLOSSARY AND DEFINITIONS

Administration of Medical Gas - To give to a patient a medical gas product by introduction of that gas into the body by inhalation or by external application (e.g. application of liquid nitrogen).

BNF- British National Formulary (latest addition available at <https://www.new.medicinescomplete.com/#/>)

Controlled Stationery - Any stationery (e.g. drug prescription chart) which, in the wrong hands, could be open to abuse within the system.

Cryogenic Liquid - A medical gas which has been cooled to liquid form and which is then used to freeze tissues requiring treatment.

Healthcare Professional - A registered practitioner in an occupation which requires specialist education and training in practical skills in health care. The professions concerned are self-regulating and practitioners are expected to satisfy their profession's accepted standards of practice and conduct.

For the purposes of this policy, these practitioners are accepted to include:

- Registered nurses or midwives
- Doctors (medical practitioners)
- Dentists
- Dieticians
- Pharmacists
- Registered Pharmacy Technicians
- Podiatrists
- Dental Therapists

Medical Gas - Any gas which is manufactured, sold and/or supplied for use wholly or mainly in being administered to one or more human beings for a medicinal purpose.

MHRA - Medicines and Healthcare products Regulatory Agency is an agency of the Department of Health.

NMC - Nursing and Midwifery Council (UK)

NPSA - National Patient Safety Agency, whose responsibilities passed to the NHS Commissioning Board Special Health Authority on 1st June 2012 and subsequently to NHS Improvement.

Patient - A person who receives a medical gas, although individual services may refer to them, for example, as service user, client or resident

Patient Group Directions (PGD) - A specific written instruction for the supply or administration of medicines to clinical groups of patients who may not be individually identified before presentation for treatment

Prescribe - To order in writing (or electronically) the supply of a medical gas for a named patient (see "Prescription")

Prescriber - A healthcare professional that is legally authorised to prescribe a medical gas, including medical and non-medical prescribers

Prescription - An order for the dispensing or administration of a medical gas. The order is presented to a professional who is legally authorised to dispense or administer. The order must be either:

- a) in writing in a legally prescribed format and signed by the person authorised by law to prescribe, or
- b) made, using a Trust-agreed electronic prescribing system, by the person authorised in law to prescribe medical gases, and who has been provided with a secure, individual computer access password.

Prescription Record Chart - Authorised drug chart for recording patient prescriptions and administration.

Supply - To lawfully provide a medical gas directly to a patient or to a carer for administration to patient(s).

Treatment - The management and care (including use of medicines and procedures) of a patient to prevent or cure disease or to ameliorate suffering and disability.

APPENDIX 1 – Equality Impact Assessment Form

<u>Step 1 – Scoping; identify the policies aims</u>	Answer		
1. What are the main aims and objectives of the document?	To put in place measures for Solent NHS Trust to ensure the safe use of medical gases and to reduce any risks associated with each gas. It thereby provides direction on ensuring access to medical gas treatment to all patients when required		
2. Who will be affected by it?	All staff employed directly and indirectly by the organisation whose work involves them in any way with ordering, prescribing, dispensing, supplying, transporting and administering medical gases. Any member of public or patient who will be treated using medical gases		
3. What are the existing performance indicators/measures for this? What are the outcomes you want to achieve?	That all staff refer to the policy and follow all the principles it contains with regard to the use and handling of medical gases. Furthermore, that the policy is used as a framework for more detailed local service standard operating procedures that relate to medical gases.		
4. What information do you already have on the equality impact of this document?	Existing incident report data and usage data		
5. Are there demographic changes or trends locally to be considered?	No		
6. What other information do you need?	Non identified		
<u>Step 2 - Assessing the Impact; consider the data and research</u>	Yes	No	Answer (Evidence)
1. Could the document unlawfully discriminate against any group?		✓	
2. Can any group benefit or be excluded?		✓	
3. Can any group be denied fair & equal access to or treatment as a result of this document?		✓	This policy specifies the safe and effective use of medical gases equally to all groups,

			albeit that some requirements are specific to certain care settings, e.g. in community nursing, sexual health.
4. Can this actively promote good relations with and between different groups?	✓		
5. Have you carried out any consultation internally/externally with relevant individual groups?	✓		Please see routes of consultation and ratification process.
6. Have you used a variety of different methods of consultation/involvement	✓		Consultation within organisation. Please see above.
<u>Mental Capacity Act implications</u>			
7. Will this document require a decision to be made by or about a service user? (Refer to the Mental Capacity Act document for further information)		✓	
<u>External considerations</u>			
8. What external factors have been considered in the development of this policy?			This policy has taken into consideration all Health and Safety Executive legislative management changes that have taken place.
9. Are there any external implications in relation to this policy?			No
10. Which external groups may be affected positively or adversely as a consequence of this policy being implemented?			No

If there is no negative impact – end the Impact Assessment here.

APPENDIX 2 – Guidance on Giving Oxygen and Oxygen Saturation Levels

See British Thoracic Society Guideline for Oxygen use in Adults in Healthcare and Emergency Settings at:

<https://www.brit-thoracic.org.uk/quality-improvement/guidelines/emergency-oxygen/>

For Table 1 – Critical illness requiring high levels of supplemental oxygen – see page i2

For Chart 1 – Oxygen Prescription for Acutely Hypoxaemic Patients – see page i3

For Table 2 – Serious illnesses requiring moderate levels of supplemental oxygen if the patient is hypoxaemic – see page i4

For Table 3 – Conditions for which patients should be monitored closely but oxygen therapy is not required unless the patient is hypoxaemic – see page i4

For Table 4 – COPD and other conditions requiring controlled or low dose oxygen therapy – see page i5



For Chart 2 – Flow Chart for Oxygen Administration on General Wards – see page i6

See Resuscitation Council (UK) - Guideline for Paediatric Basic Life Support at:


<https://www.resus.org.uk/resuscitation-guidelines/paediatric-basic-life-support/>

APPENDIX 3 – Oxygen Administration Systems

a. Nasal Cannulae

DEVICE	DESCRIPTION	PURPOSE
<p data-bbox="251 451 609 493">Nasal Cannulae</p> 	<p data-bbox="609 451 982 661">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 which is thus self-retaining.</p> <p data-bbox="609 756 982 819">Uncontrolled oxygen therapy</p> 	<p data-bbox="982 451 1352 661">Cannulae are preferred to masks by most patients. They have the advantage of not interfering with feeding and are not as inconvenient as masks during coughing and sneezing.</p> <p data-bbox="982 661 1352 871">It is not advisable to assume what percent oxygen (FI02) the patient is receiving according to the Litres delivered but this is not important if the patient is in the correct target range.</p>
ACTION	RATIONALE	
<p data-bbox="251 1302 609 1428">1. (When using nasal cannula). Position the tips of the cannula in the patient's nose so that the tips do not extend more than 1.5cm into the nose.</p>	<p data-bbox="609 1302 1352 1428">Overlong tubing is uncomfortable, which may make the patient reject the procedure. Sore nasal mucosa can result from pressure or friction of tubing that is too long.</p>	
<p data-bbox="251 1480 609 1606">2. Place tubing over the ears and under the chin as shown above. Educate patient re prevention of pressure areas on the back of the ear.</p>	<p data-bbox="609 1480 1352 1606">To allow optimum comfort for the patient. To prevent pressure sores.</p>	
<p data-bbox="251 1638 609 1726">3. Adjust flow rate, usually 2-4 l/min but may vary from 1-6 l/min in some circumstances.</p>	<p data-bbox="609 1638 1352 1726">Set the flow rate to achieve the desired target oxygen saturation.</p>	

b. Fixed Performance Mask (Venturi Mask and Valve)

DEVICE	DESCRIPTION	PURPOSE
<p>Venturi mask</p> 	<p>A mask incorporating a device to enable a fixed concentration of oxygen to be delivered independent of patient factors or fit to the face or flow rate. Oxygen is forced out through a small hole causing a Venturi effect which enables air to mix with oxygen.</p> <p>Controlled oxygen therapy</p>	<p>This is a high performance oxygen mask designed to deliver a specified oxygen concentration regardless of breathing rate or tidal volume.</p> <p>Venturi devices come in different colours for %</p> <p>Blue = 24% White = 28% Yellow = 35% Red = 40% Green = 60%</p>
<p>ACTION</p> <ol style="list-style-type: none"> 1. (When using Venturi mask) Connect the mask to the appropriate Venturi barrel attached firmly into the mask inlet. 2. Fasten oxygen tubing securely. 3. Assess the patient's condition and functioning of equipment at regular intervals according to care plan. 4. Adjust flow rate. The minimum flow rate is indicated on the mask or packet. The flow should be doubled if the patient has a respiratory rate above 30 per minute. 	<p>RATIONALE</p> <p>To ensure that patient receives the correct concentration of oxygen</p> <p>Correctly secured tubing is comfortable and prevents displacement of mask/cannulae.</p> <p>To ensure patient's safety and that oxygen is being administered as prescribed.</p> <p>Higher flows are required for patients with rapid respiration and high inspiratory flow rates. This does not affect the concentration of oxygen but allows the gas flow rate to match the patient's breathing pattern.</p>	

c. Simple Facemask (variable flow)

DEVICE



DESCRIPTION

Mask has a soft plastic face piece, vent holes are provided to allow air to escape. Maximum 50%-60% at 15ltrs/minute flow.

PURPOSE

This is a variable performance device. The oxygen concentration delivered will be influenced by:
a. the oxygen flow rate (litres per minute) used, leakage between the mask and face.
b. the patient's tidal volume and breathing rate.

Simple face mask
 Variable Percentage
 (Delivers unpredictable concentrations that vary with flow rate)

Uncontrolled Oxygen therapy

NOT to be used for CO₂ retaining patients.

Nasal cannulae should be used for most patients who require medium dose oxygen but a simple face mask may be used due to patient preference or if the nose is blocked

ACTION

RATIONALE

1. (If using simple face mask) Gently place mask over the patient's face, position the strap behind the head or the loops over the ears then carefully pull both ends through the front of the mask until secure.

Ensure a comfortable fit and delivery of prescribed oxygen is maintained.

2. Check that strap is not across ears and if necessary insert padding between the strap and head.

To prevent irritation.

Adjust the oxygen flow rate. Must never be below 5L/min

Flows below 5L/m do not give enough oxygen and may cause increased resistance to breathing and may also cause CO₂ re-breathing due to the small mask size.

d. Reservoir Mask (non-rebreathe mask)

DEVICE

**Reservoir Mask
(Non-rebreathe Mask)**



DESCRIPTION

Mask has a soft plastic face piece with flap-valve exhalation ports which may be removed for emergency air-intake. There is also a one-way valve between the face mask and reservoir bag.

PURPOSE

In non re-breathing systems the oxygen may be stored in the reservoir bag during exhalation by means of a one-way valve. High concentrations of oxygen 80-90% can be achieved at relatively low flow rates.

Uncontrolled oxygen therapy

NOT to be used for CO₂ retaining patients except in life-threatening emergencies such as cardiac arrest or major trauma.

ACTION

1. (Non Rebreathe Reservoir Mask)
Ensure the reservoir bag is inflated before placing mask on patient, this can be maintained by using 10-15 litres of oxygen per min.
2. Adjust the oxygen flow to the prescribed rate.

RATIONALE

To ensure the optimal flow of oxygen to the patient.

Inadequate flow rates may result in administration of inadequate oxygen concentration to the patient.

Appendix 4 - Reordering Process for Medical Gas Cylinders

Oxygen Location Numbers

(To quote when ordering replacement small CD oxygen cylinders for the resus bags from BOC)

Bag Number	Service	Location	Location Number
001	Cedar School	The Cedar School, SO16 0XN	3359212
002	Mary Rose Academy	Mary Rose Academy, PO4 8GT	3360339
003	Rosewood School	Rosewood Free School, SO16 5NA	3359215
004	Civic 5th Floor (Community Nursing)	Civic Offices, 5th Floor, PO1 2GL	3397248
005	BCDC - Childrens Services	BCDC, PO2 0TA	3360337
006	Horizon Centre - Children's Services	Horizon Centre SO16 4XE	3412274
007	Falcon House - CAMHS	Falcon House PO4 8LD	1378211
008	Training Adelaide	Adelaide H/C, SO16 4XE	N/A
009	Training Adelaide	Adelaide H/C, SO16 4XE	N/A
010	Training SJH	SJH, PO4 8LD	N/A
011	Training SJH	SJH, PO4 8LD	N/A
012	Simulation	SJH, PO4 8LD	N/A
013	SMH - Main Reception	SMH, PO3 6AD	From porters
014	SMH - Sexual Health	SMH, PO3 6AD	From porters
015	SMH - Mental Health 2	SMH, PO3 6AD	From porters
016	SMH - A2i	SMH, PO3 6AD	From porters
017	SMH - Physio	SMH, PO3 6AD	From porters
018	SMH-Spinniker Ward	SMH, PO3 6AD	From porters
019	Bitterne H/C - Dental Clinic	Bitterne Health Centre, SO18 6BT	2008863
020	Bitterne H/C - Dental Domiciliary	Bitterne Health Centre, SO18 6BT	2008863
021	Bitterne H/C - (Reception - Left)	Bitterne Health Centre, SO18 6BT	2367454
022	Bitterne HC - (Reception - Right)	Bitterne Health Centre, SO18 6BT	2367454
023	SJH -Turner Centre	SJH, PO4 8LD	From porters
024	SJH – Oakdene Ward	SJH, PO4 8LD	From porters
025	SJH – Brooker Ward	SJH, PO4 8LD	From porters
026	SJH – Hawthorn Ward	SJH, PO4 8LD	From porters
027	SJH – Maple Ward	SJH, PO4 8LD	From porters
028	SJH - Langstone Centre	SJH, PO4 8LD	From porters
029	WCH - Kite Ward	WCH, SO16 4 XE	From porters / 1378091
030	Substance misuse (Recovery Hub)	Recovery Hub, PO5 1JG	3412997
031	Aldershot - Sexual Health	Aldershot C/H, GU11 1AY	3412998
032	Aldershot - Dental Clinic	Aldershot C/H, GU11 1AY	2757681
033	Aldershot - Dental Domiciliary	Aldershot C/H, GU11 1AY	2757681
034	Andover - Dental Clinic	Andover H/C, SP10 3LD	2758250
035	Andover - Dental Domiciliary	Andover H/C, SP10 3LD	2758250
036	Bramblys Grange - Dental Clinic	Bramblys Grange, RG21 8UN	1378135

037	Brambllys Grange - Dental Domiciliary	Brambllys Grange, RG21 8UN	1378135
038	Eastleigh - Dental Clinic	Eastleigh Health Centre, SO50 9AG	1378237
039	Eastleigh - Dental Domiciliary	Eastleigh Health Centre, SO50 9AG	1378237
040	Eastleigh - Sexual Health	Eastleigh Health Centre, SO50 9AG	3413011
041	Eastney - Dental Clinic	Eastney Health Centre, PO4 9HU	2566635
042	Eastney - Dental Domiciliary	Eastney Health Centre, PO4 9HU	2566635
043	GWMH - Dental Clinic	GWMH, PO12 3PW	2570432
044	GWMH - Dental Domiciliary	GWMH, PO12 3PW	2570432
045	GWMH - Dental Domiciliary	GWMH, PO12 3PW	2570432
046	Havant - Dental Clinic	Havant Health Centre, PO9 2AZ	2567939
047	Havant H/C - Dental Domiciliary	Havant Health Centre, PO9 2AZ	2567939
048	Havant H/C - Dental Domiciliary	Havant Health Centre, PO9 2AZ	2567939
049	Hythe - Dental Clinic	Hythe Medical Centre, SO45 5WX	2719575
050	Hythe - Dental Domiciliary	Hythe Medical Centre, SO45 5WX	2719575
051	Pickles Coppice - Dental Clinic	Pickles Coppice, SO16 9QX	2008865
052	Pickles Coppice - Dental Clinic	Pickles Coppice, SO16 9QX	2008865
053	New Milton - Dental Clinic	New Milton Health Centre, BH25 6EN	1378096
054	New Milton - Sexual Health	The Arnewood Practice, BH25 5JP	1378096
055	Petersfield - Dental Clinic	Petersfield Comm Hospital, GU32 3LB	3014964
056	Petersfield - Dental Domiciliary	Petersfield Comm Hospital, GU32 3LB	3014964
057	Poswillo – Dental Clinic	QAH Hospital Site, PO6 3LY	3413013
058	Romsey - Dental Clinic	Romsey Hospital, SO51 7ZA	2065779
059	RSH - Dental Clinic	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
060	RSH - Dental Domiciliary	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
061	RSH - Sexual Health	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
062	RSH - Diabetic Resource Centre	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
063	RSH - Nicholstown GP Surgery	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
064	RSH - Fanshawe Ward	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
065	RSH - Lower Brambles	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
066	RSH - Occupational Health	Royal South Hants Hospital, SO14 0YG	<i>From porters</i>
067	Civic 1/3 floor – Community Nursing	Civic Offices, 1st and 3rd Floor, PO1 2GL	3397248
068	Sommerstown - Dental Clinic	Somerstown Central, PO5 4EZ	3244037
069	Sommerstown- Dental Domiciliary	Somerstown Central, PO5 4EZ	3244037
070	Crown Heights - Sexual Health	Crown Heights, RG21 7TW	3252121
071	Oak Park Havant - Sexual Health	Oak Park Community Clinic, PO9 2AW	3413022
072	Fareham H/C - Sexual Health	Fareham Health Centre, PO16 7ER	3266348
073	Andover H/C - Sexual Health	Andover Health Centre, SP10 3LD	3227836
074	Chase - Sexual Health	Chase Community Hospital, GU35 0YZ	3413023
075	Alton H/C - Sexual Health	Alton Health Centre, GU34 2RD	3063549
076	Stoneham Moorgreen - MSK	Stoneham Centre, SO30 3HA	3413036
077	Unity 12 Rose Road – Rehab (VRS)	Unity 12 Centre, SO14 6TE	3365199
078	WCH – Snowdon Ward	WCH, SO16 4 XE	<i>From porters /</i> 1378091
079	Adelaide H/C – GP Surgery	Adelaide Health Centre, SO16 4 XE	2842967

080	Adelaide H/C - MSK	Adelaide Health Centre, SO16 4 XE	3362983
081	Adelaide H/C - Podiatry	Adelaide Health Centre, SO16 4 XE	3193515
082	Portswood Solent GP Surgery	Portswood Solent GP Surgery, SO17 2GD	2972040
083	Paulsgrove healthy living - Podiatry	Paulsgrove, PO6 4HG	3413039
084	Waterlooville H/C - Podiatry	Waterlooville Health Centre, PO7 6AL	3413041
085	Jubilee House	Jubilee House, PO6 3NH	2344786
086	Thorn Hill - Reception	Thornhill H/C, SO19 6PJ	3386399
087	Hythe - Sexual Health	Waterside Health Centre, SO45 5WX	3413042
088	Adelphi House – Childrens Therapies	Aldephi House, RG21 7SN	3390468
089	St Clements - Sexual Health	St Clements Surgery, SO23 8AD	3160862
090	Cosham H/C - Podiatry	Cosham Health Centre, PO6 3AW	3413043
091	Tree Tops (SARC)	The Treetops Centre, PO6 3EP	3387063
092	High Point Venue - Trust HQ	HighPoint Venue, SO19 8BR	3413044
093	GWMH - Sexual health	GWMH, PO12 3PW	3413045
094	Homeless Healthcare Team	Cranbury Avenue , S014 0LT	3177684
095	IOW - Dental Clinic	200 Newport Road, PO31 7ER	3380114
096	RSH - SLT (No meds in bag)	Royal South Hants Hospital, SO14 0YG	3413052
097	IOW - Dental Domiciliary	200 Newport Road, PO31 7ER	3380114

How to Order a replacement small CD oxygen cylinder for your resus bag

July 2019

Royal South Hants Hospital Site



Portering services @ RSH replace all used and expired small CD oxygen cylinders for the resus bags



Call Security @ RSH (02380 540094) who will deliver a replacement and take the old cylinder away

Western Community Hospital Site



Kite Ward and Snowdon Ward to obtain oxygen from Porters on WCH site



Adelaide H/C and Horizon Centre are excluded from the above and order directly from BOC - Call 0800 111 333 and quote location account number (+ company name, the first line of your address and the postcode. Please have all this information to hand when placing an order with BOC)

St James's Hospital Site



Portering services @ SJH replace all used and expired small CD oxygen cylinders for the resus bags



Call the Domestic Department (02392 540372) and the porters will collect and replace cylinders

(stock replacement is then done by Jenny Ford when they Audit and order on requirement)

St Mary's Hospital Site



Portering services @ SMCHC replace all used and expired small CD oxygen cylinders for the resus bags



Call the Domestic Department (02392 540788) and the porters will collect and replace cylinders.

(stock replacement is then done by BOC who replace empty with full cylinders on the normal weekly delivery)

All Other Sites



Small CD oxygen cylinders for resus bags to be replaced directly through BOC



Call 0800 111 333 and quote your location account number. You will also be asked for the company name, the first line of your address and the postcode. Please have all this information to hand when placing an order with BOC

Appendix 5 - Storage and handling of medical gas cylinders survey 2019

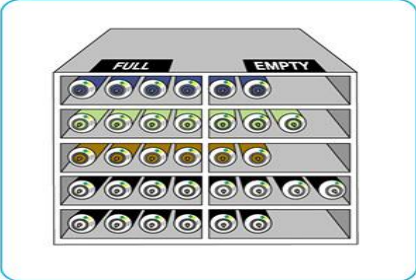
Solent NHS Trust Estates Medical Gas Compound Assessment V2 Jan 2019



Location :	Date :	Name : Signature :
Main Storage construction		Comments
under cover	Yes / No	
stand alone building	Yes / No	
inside / attached to building	Yes / No	
hard standing	Yes / No	
floor should be essentially level	Yes / No	
ventilated (high and/ or low level vents)	Yes / No	
adequate lighting	Yes / No	
warning notices posted prohibiting smoking and naked lights within the vicinity of the store	Yes / No	
lockable	Yes / No	

Storage and handling of medical gas cylinders survey 2019

Solent NHS Trust Estates Medical Gas Compound Assessment V2 Jan 2019

Fire extinguisher provided either within the store or at a convenient place nearby	Yes / No	
Fire detection within the store	Yes / No	
Means of raising an alarm (Fire call points) either within the store or at a convenient place nearby	Yes / No	
Inside storage compound area		Comments
allow for F, HX, G and J size cylinders to be stored vertically (chained)	Yes / No	
allow for C, CD, D and E size cylinders to be stored horizontally on shelves (made of a material that will not damage the surface of the cylinders)	Yes / No	
		
allow for segregation of full and empty cylinders and permit separation of different gases within the store	Yes / No	

Storage and handling of medical gas cylinders survey 2019

Solent NHS Trust Estates Medical Gas Compound Assessment V2 Jan 2019



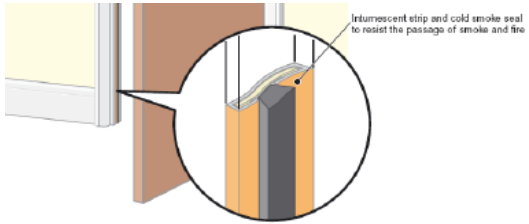
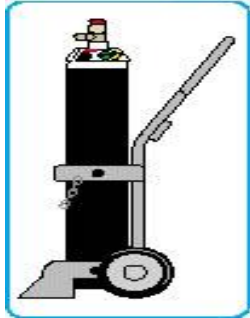
<p>The diagram shows a storage area for medical gas cylinders. On the left, under the heading 'FULL', there are four blue cylinders. On the right, under the heading 'EMPTY', there are four black cylinders. A horizontal line with arrows at both ends spans across the cylinders, indicating a clear aisle. The background is a simple room with a door on the left and a yellow ceiling.</p>		
<p>is the store free from clutter (i.e. equipment etc) and other combustible materials</p>	<p>Yes / No</p>	
<p>should be NO non-medical gases, flammable liquids, combustible materials or sources of ignition</p>	<p>Yes / No</p>	

Appendix 6 - Storage and handling of medical gas cylinders survey 2019

Solent NHS Trust Internal ready to use storage facilities assessment V2 Jan 2019



Location :	Date :	Name : Signature :
Ready to use stores/ Local storage (wards etc) Handling/ storage inside buildings		
Signage denoting the gases within displayed on the store door	Yes / No	
Housekeeping "clean and tidy ease of access/ egress"	Yes / No	
Sufficient space to manoeuvre onto and off trolleys	Yes / No	
Door Locked	Yes / No	
Cylinders secured to the wall either by hook/chain, braced or secured onto trolley	Yes / No	
Full cylinders only (No empty)	Yes / No	

<p>FD 30 Fire Door</p> 	<p>Yes / No</p>	
<p>Fire detection within storage area</p>	<p>Yes / No</p>	
<p>Local storage (non specific storage area i.e. Corridors etc) Is a cylinders support system used?</p>		<p>Comments</p>
<p>Trolley with chained cylinders</p> 	<p>Yes / No N/A</p>	
<p>Hooks attached to wall and cylinders chained</p>	<p>Yes / No N/A</p>	
<p><i>If answered No to the above two questions then please write in the comment box how they are stored</i></p>		

