

The Newcastle upon Tyne Hospitals NHS Foundation Trust

Medical Gas Pipeline Systems (MGPS) Policy

Effective: March 2009

Review: August 2011

1. Policy Statement

It is the policy of the Newcastle upon Tyne Hospitals NHS Foundation Trust to provide a safe and healthy environment for all its patients, staff and visitors and as such this Policy Document is provided to ensure that all staff involved with medical gases understand management and individual responsibilities and methods employed by the Trust for ensuring safe operational practice of the MGPS.

The document details the day to day operational requirements and information that may be required in the event of an emergency.

This document summarises the principal management aspects of MGPS and applies to all sites in the Trust. It is complimented by two further documents on each Hospital site viz. 'MGPS operational, emergency and maintenance policies for Estates staff' and 'MGPS operational and emergency policies for Users'

In the policy, key persons are named for each site within the Trust. Those persons have the responsibility of implementing and managing the policy on behalf of the Trust.

Within the document, departments with main responsibilities have been identified; these include operating, maintaining or providing medical gases.

All staff must be aware at all times that they have an individual responsibility for the maintenance of safe systems of work and that it is through their compliance with this document that the Trust can continue to provide the safe and effective quality services expected of it.

2. Aim and Scope

The aim of this policy is to provide up to date information procedures to be followed in order to ensure the safety of staff, patients and visitors to the Trust's premises.

Encompassed in the procedures consideration is given to plant and equipment comprising of, using, maintaining or served by the medical gas pipeline systems (MGPS) delivering medical oxygen, nitrous oxide, nitrous oxide/oxygen mixture 50% v/v, medical air (for both respiratory and surgical tool applications), medical vacuum, surgical carbon dioxide, helium / oxygen mixtures (in accordance with European Pharmacopoeia and manufacturers' Product Licences) and anaesthetic gas scavenging systems for medical purposes and equipment testing only at:

Freeman Hospital including PFI,
Royal Victoria Infirmary including PFI
Newcastle General Hospital
Walkergate Hospital
Centre for Life

For the purposes of this document, MGPS includes the safe management, use, handling and storage of compressed medical gas cylinders and cryogenic liquid nitrogen used for medical treatments.

It is intended that it be used by all staff involved in the use, management and maintenance of the above systems and associated equipment.

It is to be used as the support document for the MGPS "PERMIT TO WORK" scheme which is in operation at the above locations.

This policy is supported by further operational manuals specific to each site.

3. Functional Responsibilities

3.1 General

Key personnel have a functional responsibility to ensure that the MGPS is managed and operated safely and efficiently. In this document the job function is referred to rather than the name of staff carrying out the function. Lists of staff and their functional responsibilities are provided in Appendix 2 of this document

With the exception of The Authorising Engineer and Competent Person (MGPS), the titles and roles listed refer in the main to directly employed hospital staff. In all cases a defined responsibility in connection with MGPS forms only part of their normal duties.

Due to the specialist requirements associated with MGPS, actual work on the systems is carried out by contractors who are trained and licensed to work on the systems. The title 'Competent Person (MGPS)' defines this role. Although it is normal practice for a company to use staff who have developed specific site knowledge, this arrangement cannot be guaranteed, especially during out of hours periods.

The identified Authorised Person (MGPS) is responsible for the day to day management of the MGPS and it is the Authorised Person (MGPS) alone who can decide whether the MGPS can be taken into or out of use, after written permission (permit to work) by the Designated Medical/Nursing Officer in cases where the effect has a direct impact on the patient.

The Authorised Person(s) (MGPS) will hold and maintain the Medical Gas Permit to Work books.

3.2 Key personnel

The following are the key personnel who have specific responsibilities within the operational policy:

- a. Chief Executive;
- b. Head of Estates and Facilities;
- c. Maintenance Manager;
- d. Authorising Engineer (MGPS)

- e. Authorised Person (MGPS);
- f. Competent person (MGPS);
- g. Quality controller (QC (MGPS));
- h. Designated medical or nursing officer. (DMO / DNO (MGPS))

3.2.1 Chief Executive

The Chief Executive holds ultimate management responsibility, including allocation of resources and the appointment of personnel, for the Organisation in which the MGPS are installed.

The formal responsibility for the MGPS rests with the Chief Executive, although the Authorised Person (MGPS) retains effective responsibility for day-to-day management of the MGPS.

The Chief Executive has delegated specific responsibilities to key personnel; the extent of such delegation is clearly set out below, together with the arrangements for liaison and monitoring.

3.2.2 Head of Estates and Facilities / Maintenance Manager

The Director of Estates and Facilities delegates the day to day operational aspects of the MGPS to the Maintenance Manager.

3.2.3 Maintenance Manager

The Maintenance Manager has responsibility for the integrity and efficacy of the MGPS, although the site specific Authorised Person (MGPS) retains effective responsibility for the day to day management of the MGPS.

This specifically includes the monitoring and implementation of the operational policy for MGPS. In particular, ensuring that the MGPS complies with the requirements of this Policy and all work must be carried out in accordance with the MGPS Permit to Work procedures.

3.2.4 Authorising Engineer (MGPS)

An Authorising Engineer (MGPS) is appointed by the Trust from the national IHEEM database of registered Authorising Engineers (MGPS).

The role of the Authorising Engineer (MGPS) includes the following;

- to recommend to the Chief Executive those persons who, through individual assessment, are suitable to be Authorised Persons (MGPS);
- to ensure that all Authorised Persons (MGPS) have satisfactorily completed an appropriate training course and that all training is documented

- to ensure that all Authorised Persons (MGPS) are re-assessed every three years and have attended a refresher or other training course prior to such re-assessment;
- to conduct an annual audit and review of the management systems of the MGPS including Permit to Work;
- to assist the Authorised Person (MGPS), when required, with monitoring the implementation of the MGPS Operational Policy and Procedures.

3.2.5 Authorised Person (MGPS)

The Authorised Person (MGPS) is defined as that person designated by the Chief Executive to be responsible for the day-to-day management of the MGPS at a particular site or sites. This includes the issue of permits, the operation of the Permit to Work procedure, management of system documentation and security and safe and effective maintenance and operation of the MGPS in accordance with Statutory requirements and other guidelines listed in Appendix 1 of this document.

The Authorised Persons (MGPS) are appointed in writing by the Chief Executive on the recommendation of the Authorising Engineer (MGPS), who has specialist knowledge of MGPS and is on the national IHEEM register of Authorising Engineers (MGPS).

An individual assessment of the Authorised Persons (MGPS) will be carried out to ensure that the Officer is suitably qualified and experienced to fulfil the necessary requirements. Re-assessment will be carried out every three years to ensure continuation of appointment.

It is extremely unlikely that specialist contractors would be able to carry out the day-to-day duties of an Authorised Person (MGPS) and they should, therefore, not be appointed as Authorised Persons (MGPS), except under exceptional circumstances.

Operating the Permits for the authorisation of work requires the fullest compliance of all staff and their acceptance and understanding of the individual responsibilities involved. The Authorised Person (MGPS):

- takes the lead in co-ordinating the work, explaining fully the extent and duration of any disruption to the service
- ensures that all contractors' "Competent Persons (MGPS)" follow the procedures set out in the Permit and carry out the work in accordance with Trust Estates policies. This will involve provision and updating of 'As-fitted' drawings, assessment of risk, preparation and assessment of method statements and checks on compliance of Contractors' Health and Safety policies, training records, test equipment etc.

3.2.6 The Authorised Person (MGPS) is responsible for ensuring that:

- all Designated Medical / Nursing Officers likely to be involved are advised of the estimated duration of the work and the interruption to the MGPS;

- all terminal units affected (out of service) are appropriately labelled.

Due to the size of the Trust, a number of Authorised Persons have been appointed to ensure that all required duties are co-ordinated efficiently. The Chief Executive has appointed a Senior Authorised Person (MGPS) who has overall responsibility for that site.

Authorised Persons (MGPS) are required to liaise closely with other professionals in various disciplines. Consequently the appointment will be made known in writing to all interested parties. The Authorised Person (MGPS) will have direct contact with the Quality Controller (QC (MGPS)), Users and other key personnel.

The Authorised Persons (MGPS) are responsible for ensuring that work is carried out only by approved specialist contractors, registered under ISO 9001 or ISO 13485, with scope of registration defined as design, installation, commissioning and maintenance of MGPS as appropriate.

3.2.7 Competent person (MGPS)

The Competent Person (MGPS) is the specialist contractor / contractor's employee who carries out the work on the MGPS as directed by the Authorised Person (MGPS) in accordance with the MGPS Permit to Work procedures and appropriate Method Statements and Health and Safety policies submitted by the Contractor.

The Competent Person (MGPS) must have received appropriate training, by their employees, and must be on a list of Competent Persons (MGPS) held by the contractor and the Trust.

The specialist contractor is responsible for assessing the competence of his directly employed competent staff and maintaining a register of Competent Persons (MGPS). This register must be made available to an Authorised Person (MGPS) on request.

3.2.8 Quality Controller (QC (MGPS))

The persons designated as Quality Controllers (QC (MGPS)) are responsible for the quality control of the medical gases (in accordance with the latest European Pharmacopoeia and Manufacturers' Product Licences) at the terminal unit and on a quarterly basis check and record the performance of medical air compressors.

Companies supplying medical gases have their own product licences and Qualified Person who ensures the quality of gas delivered to site meets the specified criteria.

The Authorised Person (MGPS) will need to liaise with the QC before an MGPS can be taken into use.

The QC must have received training on the verification and validation of MGPS and be familiar with the requirements of this policy.

He / she must be on the national register of MGPS Quality Controllers.

3.2.9 Designated Medical or Nursing officer (MGPS)

The Designated Medical/Nursing Officer (MGPS) is the person in each department (or covering a range of departments) with whom the Authorised Person (MGPS) liaises on any matters affecting the MGPS. It is this person who would give permission for a planned interruption to the supply.

It is essential that there is liaison between the Medical and Nursing staff that use the MGPS and the Authorised Person (MGPS) in order to ensure that the MGPS is appropriate to their needs.

The Designated Medical/Nursing Officer (MGPS) must give permission for any interruption to the MGPS takes place and they must sign the appropriate parts of the Permit.

The Designated Medical/Nursing Officer (MGPS) is responsible for ensuring that all relevant staff are aware of the interruption to the MGPS and which terminal units cannot be used.

All Designated Medical/Nursing Officers (MGPS) must have received adequate training on the MGPS relevant to their departments and on the action to be taken in the event of an emergency.

3.2.10 Designated Person (MGPS)

Portering staff trained in the handling of medical gas cylinders will be known as Designated Persons and will be responsible for delivery of cylinders to wards, plant rooms etc. No other persons should be involved cylinder handling unless properly trained or supervised.

Connection of cylinders to manifold systems will be undertaken by the Designated Person

Exceptions include the use of a Competent Person to change cylinders, set up temporary cylinders stations, etc during commissioning works, planned or emergency shutdowns and plant maintenance.

Connection of cylinders to patient-connected medical equipment will be carried out by appropriately trained nursing / theatre staff.

4. Training

No person shall operate medical gas systems or equipment unless they are properly trained or supervised.

Essential training and refresher training is specific to the functional responsibilities of the key personnel involved in the day to day operation, maintenance and use of the MGPS, all training must be documented.

Guidance on training course content and learning outcomes is detailed in Health technical Memorandum 02-01 Medical gas Pipeline Systems part B: Operational Management section 7

5. Site Plan/System Layout

It is essential that staff with a responsibility for management of MGPS clearly understand of the various system elements and how they are configured in each site specific document.

This section identifies, using site plans, the location of plant rooms and plant types.

Plant, manifolds and cylinder stores are identified on the plans, which also show main traffic routes through the hospital.

Medical gas pipeline routes, control valves and terminations are not shown on the plans.

6. System Elements

Within the site specific document, detail is provided on the following subjects and how they function within each of the Hospital sites. In all cases, appropriate specific reference is made to actual equipment or plant locations and relevant safety requirements.

All plant must comply with current specifications for the supply of plant for use in medical gas pipeline systems.

Estates Document (For Estates Staff)

- Main Cylinder Store
- Ready to use Cylinder Stores
- Medical Gas Manifolds and Manifold Rooms
- Central Vacuum and Compressed Air Plant
- Liquid Oxygen Installations
- Medical Gas Alarms
- Terminal Units
- Valve Boxes
- Flexible Hoses
- Emergency Manifolds
- Anaesthetic Gas Scavenging Systems
- Monitoring of occupational exposure levels
- Reporting of Accidents and Incidents

Users Document (For Clinical and Portering staff)

- Cylinder storage
- Terminal Outlets
- Medical gas alarms
- Emergency isolating valves
- Flexible hoses
- Cryogenic equipment
- Reporting of Accidents and Incidents

7. System Management

Within this Section of the site specific document, management systems are described in detail.

Estates Document - (copy to Pharmacy)

- Describes safe methods of cylinder handling and describes methods for changing cylinders.
- Describes the Permit to Work system which is used to co-ordinate the actions of all persons involved in working on medical gas systems.
- Describes the key control and security systems developed to ensure that access to plant and equipment is correctly controlled.
- Describes the procedures which should be followed in the event of an emergency.
- Describes the requirements for the set up and use of temporary cylinder stations

Users Document (For Clinical and Porter staff) - copy to Pharmacy

- Cylinder management (Includes safety, storage, handling, transport)
- Safe use of medical gas systems (including terminal units / hoses)
- Medical gas alarms
- Isolating valves
- Gas conservation
- Emergency situations
- Contingency planning

8. System Maintenance

System maintenance is contracted out by the Estates Department to a licensed specialist Contractor registered under ISO 13485.

Service provided includes planned preventative maintenance (PPM) and emergency 24 hour service response in accordance with the Trust's standard procedures for contract management.

All medical air receivers, protective devices and medical air pipework will be examined by a competent person, i.e. by an engineering surveyor of an approved insurance company, in accordance with the statutory requirements of the Pressure Systems Safety Regulations 2000.

These items of equipment will be included in the Written Scheme of Examination held by the Senior Authorised Person (MGPS).

9. System Repairs and Alterations / Additions

System repairs and alterations / additions are also contracted out by the Estates Department to a licensed specialist Contractor registered under ISO 13485.

With the exception of emergency works, physical service alterations must not be made prior to the preparation and verification of new Mimic diagrams, site plans, Emergency Manuals, etc., which can be used to replace existing when works are complete.

10. Ordering, Receipt and Distribution of Gases

This requirement is managed by the Pharmacy Department. Details are given in the Users' site specific documents.

11. Medical Equipment Purchase

Medical equipment using medical gases is purchased via the Supplies Department in accordance with the Trust's purchasing medical equipment procurement / management policy.

In order that equipment to be procured will not adversely affect medical gas supplies, users are advised to liaise with both Medical Engineering and an Authorised Person (MGPS) before purchase decisions are finalised.

Users should be made aware that some equipment e.g. CPAP machines impose very high demands on the medical gas system and this could affect other users

12. Medical Gas Committee

A Medical Gas Committee has been established to review the content and monitor the application of the MGPS Operational Policy in line with recommendations given in Health Technical Memorandum (HTM) 02-01 Part B, the Health and Safety at Work etc Act, the Pressure Systems Safety Regulations and Regulations 5 of both the Workplace (health, safety and welfare) Regulations 1992, and The Provision & use of Work Equipment Regulations 1998 (PUWER). The committee will also consider requirements of the NHS Spec C11 for new design requirements.

The committee incorporates a varied cross section of members to give a balance between operation and engineering disciplines:

- Clinical / Nursing
- EBME (Medical Electronics)
- Estates
- External Authorising Engineer (independent non-Trust member)
- Health and Safety
- Pharmacy
- Porters
- Risk Management
- Specialist Contractors (as invited to discuss topical issues)

The Committee will also act as a forum for all MGPS related matters.

The Committee will report to the Chief Executive.

13. Monitoring

The MGPS Policy Documents will be monitored by the Medical Gas Committee. Any proposed changes to procedures or the physical systems must be reported to and agreed by the Committee prior to any changes being made.

Proposed changes to any written procedures must be agreed with key personnel and changes made known to all affected staff before methods of working with MGPS are changed.

Author: Senior Estates Officer Specialist Services

Statutory and other requirements relevant to Medical Gas Pipeline Systems

Health and Safety at Work etc. Act 1974

Management of Health and Safety at Work Regulations 1999

Work Place (Health, Safety and Welfare) Regulations 1992

Provision and Use of Work Equipment Regulations 1998

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 1995

Control of Substances Hazardous to Health (COSHH) Regulations 2002

Pressure Systems Safety Regulations 2000

Highly Flammable Liquid and Liquid Petroleum Gas Regulations

Medicines Act 1968

Manual Handling Operation Regulations 1992 (as amended 2002)

Personal Protective Equipment at Work Regulations 2002

Electromagnetic Compatibility Regulations 2005

Electricity at Work Regulations 1989

European Pharmacopoeia

Health Technical Memorandum (HTM) 02-01 "Medical Gas Pipeline Systems",
Part A, Design, Installation, Validation and Verification
Part B, Operational Management

National Health Service Model Engineering Specification, C11, "Medical Gases"

Designated Trust Personnel

Title and location	Name	Medical gas role	Contact No.
Chief Executive	Sir L R Fenwick Via Mrs S Bessford	Executive Director	Dect 26055
Director of Estates & Facilities	Mr S Bannister	--	Dect 48172
Maintenance Manager	Mr J Swinhoe	* Senior Authorised Person (MGPS)	Dect 24971
Estates Officer (FRH)	Mr T Steele	*Authorised Person (MGPS)	Dect 31336
	Mr G Wilson		Dect 31057
Estates Officer (NGH)	Mr K Johansen	*Authorised Person (MGPS)	Dect 23785
	Mr C Murray		Dect 21851
Estates Officer (RVI)	Mr I Clayton	*Authorised Person (MGPS)	Dect 29195
	Mr C Hood		Dect 24973
	Mr L Ritson		Dect 24174
Director of Pharmaceutical Services	Mr N Watson	--	Dect 31458
Quality Controller	Mr K Dawson	*Quality Controller (MGPS)	Tel: 20920
	Mr P Hutton		Tel: 20367
Clinical Director Anaesthesia/Theatres		*Designated Medical Officer	
Director Of Nursing		*Designated Medical Officer	
Head of Medical Engineering	Mr D Crawford (FRH)		Dect 48261
	Mr J Stephenson (RVI)		Dect 29608
Health & Safety Manager			
Clinical Risk Manager			
Telephonist Supervisor	Available 24 hrs.		Dect 48811
Head Porter	Mr M Brannen	Designated Person (MGPS)	Dect 24893
Patient Services	Available 24 hrs.		Dect 24300

* Persons nominated under the Permit to Work system.

MGPS Key holders

Keys and access codes are available via the estates department for medical gas plant areas

Keys for cylinder storage areas are available via portering services

Important contact details

Estates Dept	Daytime contact – Fault line – Tel 0191 2825910
Estates Dept	Out of hours contact–Shift craftsman – RVI 29201 FRH 48804 NGH - engineer on call (after 8pm)
Portering	Daytime contact Tel 0191 2829205
Portering	Out of hours contact Tel No Via Switchboard
Pharmacy	Daytime contact Tel 0191 2829222
Pharmacy	Out of hours contact Tel No Via Switchboard
Risk Management	Daytime contact
Risk Management	Out of hours contact Tel No Via Switchboard
Specialist MGPS Contractor Beacon-MEDÆS	Service Department Tel No Emergency number 0800 252050
Medical gas cylinder orders, BOC Gases	Contact Pharmacy
Liquid Oxygen BOC Gases	Tel No 01642 452481 Emergency No 0800 111 333

* to contact switchboard Tel 0191 2336161

**THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST
IMPACT ASSESSMENT – SCREENING FORM A**

This form must be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval.

Policy Title:	Policy Management Document for Medical Gas Pipeline Systems	Policy Author:	Ian Clayton
		Yes/No?	You must provide evidence to support your response:
1.	Does the policy/guidance affect one group less or more favourably than another on the basis of:		I believe this policy document does not discriminate against any individual either employed by the Trust or as a visitor
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Culture	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability – learning difficulties, physical disability, sensory impairment and mental health problems.	No	
2.	Is there any evidence that some groups are affected differently?	No	
3.	If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?	N/A	
4(a).	Is the impact of the policy/guidance likely to be negative? <i>(If “yes”, please answer sections 4(b) to 4(d)).</i>	No	
4(b).	If so can the impact be avoided?	N/A	
4(c).	What alternatives are there to achieving the policy/guidance without the impact?	N/A	
4(d)	Can we reduce the impact by taking different action?	N/A	

Comments:	Action Plan due (or Not Applicable): Not Applicable
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Name and Designation of Person responsible for completion of this form: Ian Clayton – Senior Estates Officer Specialist Services..... Date:.....07/04/09.....

Names & Designations of those involved in the impact assessment screening process: Representatives from the medical gas committee made up from the following departments - Clinical management; Estates; External medical gas expert (AE); Trust Fire advisor; Health and Safety; Medical electronics; Pharmacy QC; Risk management; Security / Portering..

(If any reader of this procedural document identifies a potential discriminatory impact that has not been identified on this form, please refer to the Policy Author identified above, together with any suggestions for the actions required to avoid/reduce this impact.)

Policy Ratification Form

This form must be used by the author of each new or replacement policy to detail the consultation process undertaken for each policy. Please note that some policies will need to be submitted to more than one expert group. This document plus the Impact Assessment document and the final version of the policy as approved via the consultation process should be submitted to the Clinical Governance and Risk Department who will forward it to the Clinical Policy Group for final ratification.

Policy Title:	Policy Management Document for Medical Gas Pipeline Systems (MGPS)		
Policy Author:	Ian Clayton	Job Title:	Senior Estates Officer - Specialist Services

Brief Synopsis of Policy

This policy replaces an existing document outlining management responsibilities for the management of piped medical gas systems; Contents - policy statement, aim and scope, specific functional responsibilities / key personnel, training, makes reference to contents of further documents on individual site specific elements of the medical gas system

Is this a New or Replacement policy? New? Replacement?

For Replacement Policies please quote the exact title and date of the old version.

Management of Medical Gas Systems
(dated 01/02/2000 --- 28/02/2003)

For Replacement Policies please highlight the main changes in this version: (bullet points only):

This document has been a re-write to bring in to line with new HTM and legislation

Does the format of the policy comply with the Trust standard?

Has the policy been Impact assessed as required by the Trust Policy?

Does the policy contain a compliance monitoring process?

Who will be responsible for monitoring / auditing this policy?

Senior estates officer
specialist services

When will it be audited? (i.e. within 12 months of effective date)

24

What main aspects will be monitored / audited?

compliance

What methodology will be used?

Reporting back to the medical gas committee

(The paragraph needs to explain how you will know whether the policy is being complied with. For NHSLA "Key" Policies the "who" has to be a Trust committee, and needs to state that they will monitor any action plans to deal with areas of non-compliance.)

Please choose the area(s) your policy covers:

- | | | |
|---|---|---|
| <input type="checkbox"/> Child Protection | <input type="checkbox"/> Clinical Policies | <input type="checkbox"/> Complaints/Accidents/Incidents |
| <input type="checkbox"/> Corporate Governance | <input type="checkbox"/> Critical Care Services | <input type="checkbox"/> Data Quality |
| <input type="checkbox"/> Drugs | <input checked="" type="checkbox"/> Health and Safety | <input type="checkbox"/> Human Resources |
| <input type="checkbox"/> Infection Control | <input type="checkbox"/> Information and Resource packs | <input type="checkbox"/> Information Governance & PAS |
| <input type="checkbox"/> Information Technology | <input type="checkbox"/> Nursing | <input checked="" type="checkbox"/> Operational |
| <input type="checkbox"/> Research Governance | <input type="checkbox"/> Waste Management | <input type="checkbox"/> Women's Services |

Consultation process:

Group	Meeting date	Approved?	Chairman's Signature
		Yes	
		Yes	

Final policy version and policy ratification form should now be sent to Clinical Effectiveness Manager, CGARD

Ratification process:

Group	Meeting date / Chairman's action	Approved? Yes / No	Chairman's Signature
Clinical Policy Group			