

Medical Gas Policy

Management of Medical Gas Pipeline Systems & Medical Gas Cylinder

Author:	Head of Technical Services
Responsible Lead Executive Director:	Medical Director
Endorsing Body:	Acute Clinical Governance & Risk Management Group
Governance or Assurance Committee	Healthcare Quality & Assurance Committee
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i) ii)	CONTENTS Consultation and Distribution Record Change Record	Page No 4 4
1	Introduction	5
2.	Purpose and Aims	5
3. 3. 3.	1 Who is the Policy intended to Benefit or Affect	5 5 5
4 . 4. 4. 4. 4. 4. 4.	 Policy Statement Objectives Training and Competence Record Management 4.4.1 Permit to work (PTW) 4.4.2 As-Fitted Drawings 4.4.3 Plant log-sheets Reporting Structures Policy Development & Consultation 	6 6 7 7 8 8 8 8
5 . 5.		8 8 9 9 9
	 5.1.6 The Deputy Director PSSD (Projects & Assurance) (Deputy Designated Person MGPS) 5.1.7 The Head of Maintenance Services (Operations Manager MGPS) 5.1.8 The Authorising Engineer (MGPS) 5.1.9 Coordinating Authorised Person (MGPS) 5.1.10 The Authorising Person (MGPS) 5.1.11 Medical Gas Committee (MGC) 5.1.12 Competent Person (MGPS) 5.1.13 Quality Controller (QC) (MGPS) 5.1.14 Designated Nursing Officer/Designated Medical Officer (DNO/DMO): 5.1.15 Head of Hotel Services 5.1.16 Designated Porter: 	9 10 10 11 11 11 12 12 12
6.	Resource Implications	13
7.	Communication Plan	13



8.	Quality Improvement – Monitoring and Reviewing	14
	8.1 Monitoring	14
	8.2 Audits	14
	8.3 Reviews	14
9.	Equality Impact Assessment	14
10.	Frequently Asked Questions	15
11.	Archival of Documents	15
12.	References	16
	APPENDIX 1 Management and Appointment Structure for the Management of Medical Gas Pipeline Systems	17
	APPENDIX 2 Escalation and Communication Structure for the Identification of a Potential Hazard	18
	APPENDIX 3 NHSL Medical Gas Committee Corporate Governance	19
	sontrolled with	



CONSULTATION AND DISTRIBUTION RECORD				
Contributing Author / Authors	Head of Technical Services			
Consultation Process / Stakeholders:	 Medical Director Chief Officer Health & Social Care South Lanarkshire Chief Officer Health & Social Care North Lanarkshire Director of Planning, Property and Performance Nurse Director Acute Division Director of Pharmacy General Manager PSSD Senior Nurse for the Medical Division Head of Maintenance Services Head of PFI/PPP Head of Hotel Services Monklands Assistant Maintenance Manager (CAP) (MGPS) Monklands Maintenance Manager (AP) (MGPS) Deputy Director of PSSD (Operations) Quality Controller (MGPS) Authorising Engineer (MGPS) NHS Lanarkshire Medical Gas Committee 			
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CHANGE RECORD					
13/09/2023	Acting Head of Technical Services	Updated membership and responsibilities to include the Head of PFI/PPP and Deputy Director PSSD (Projects & Assurance) Updated References to include Human Medicines Regulations 2012. Inclusion of SHTM training requirements	2		



1 Introduction

NHS Lanarkshire (NHSL) recognises that the proper and safe operation of the various medical gas cylinders and pipeline systems is an integral part of its responsibilities under the Health and Safety at Work Act 1974. Under this act it is incumbent upon both management and occupiers of the premises to ensure that there is a management regime for the proper design, installation and operation of plant, equipment and systems.

The use of medical gases in the health service is extensive; they are classified as prescriptive medicinal products for patient care under the Human Medicines Regulations 2012. Allied to the use of medical gas is the containment of it, under pressure in cylinders and medical gas pipeline systems (MGPS). Medical gases do not burn however; fire and explosion are risks as the gases strongly support combustion.

2 Purpose and Aims

Safe Management of MGPS and Medical Gas Cylinders requires;

NHSL to regard Health and Safety of prime importance which are to be given an equal priority with other business and operating objectives and will ensure so far as is reasonably practicable that the safety of employees at work, patients and other persons is not adversely affected by any of the Board's operational activities.

NHSL accepts that safe management of a MGPS requires a high level of professional competence and commitment supported by adequate resources.

NHSL is committed to the provision of appropriate training for key personnel, relevant to their particular roles and activities.

NHSL proposes to continue to promote and develop a pro-active safety regime by providing information, training and instruction for all personnel (including MGPS Contractors) involved with medical gas pipeline systems and related equipment.

3 SCOPE

3.1 Who is the Policy intended to Benefit or Affect?

NHSL staff, patients, service users, carers, relatives, visitors, contractors and partner agencies.

"NHS Lanarkshire takes care to ensure your personal information is only accessible to authorised people. Our staff have a legal and contractual duty to keep personal health information secure, and confidential. In order to find out more about Data Protection legislation and how we process your information, please visit the Data Protection legislation Notice on our website at <u>www.nhslanarkshire.scot.nhs.uk</u> or ask a member of staff for a copy of our Current Data Protection legislation Notice.

3.2 Who are the Stakeholders?

NHSL staff, service users, carers and partner agencies



4 Principal Content

Overall responsibility for the implementation of this aspect of the Policy lies with the appropriate Directors of Acute Services and Community Health Partnerships.

4.1 Policy Statement

Medical Gas Pipeline Systems (MGPS) follows the convention used in the Scottish Health Technical Memorandum 02-01 (SHTM02) and is defined as central pipeline systems and cylinders supplies, by which means NHSL provides a safe, convenient and cost-effective supply of medical gases to points where these gases can be used by clinical and nursing staff for patient care.

4.2 Objectives

To provide guidance to ensure that all appropriate steps are taken to comply with the duty to manage all NHSL Medical Gas Pipeline Systems in compliance with legislative approved codes of practice, guidance and relevant standards.

To ensure procedures are implemented that provide safe, reliable medical gas pipeline systems.

To ensure that all personnel associated with the effective and safe operation of medical gas pipeline systems are fully trained and competent.

To have systems in place to assess, manage, monitor and minimise the hazards and risks arising from the use of the MGPS.

As a result of an incident occurring, a DATIX record will be created by the NHS responsible person for the work and an investigation carried out to establish a root cause and corrective actions and escalated through the National IRIC System for investigation and alert to NHS Scotland.

4.3 Training and Competence

The Health & Safety at Work Act 1974 requires every employer to provide information, instruction, training and supervision as is necessary to ensure, so far as reasonably practicable, the health and safety of their employees.

In order to comply with SHTM 02-01 and ensure safety of patients, clinical and nursing staff, maintenance personnel, porters and other MGPS users, it is essential that no one be allowed to operate or use a medical gas system or equipment unless properly trained or supervised. Each section of this Policy addresses the roles and responsibilities of defined personnel and from these lists training needs can be identified

The Executive Director should ensure that all estates/nursing/medical staff have received this training before using the MGPS and refresher courses are arranged as detailed in table 1.

The Designated Medical or Nursing Officers will receive specific training in relation to emergency procedures relevant to the ward or department under their control. All medical and nursing staff will be trained in the safe use of MGPS with refresher training being arranged annually.

All Co-coordinating Authorised Persons/Appointed Persons/Competent Persons (MGPS) should have satisfactorily completed all appropriate medical gas and first-aid training courses before they are appointed.

It is essential that all training courses include practical elements for CP's carrying out



installation works, and terminal unit servicing for CP's.

Following initial accredited training, re-training and assessment shall take place at regular intervals as shown in the table below.

Table 1

Personnel	Retraining	Re-assessment
Authorised Person (MGPS)	Every 3 years	Every 3 years
Designated Porter (MGPS)	Every year	Every year
Designated Nursing Officer (MGPS)	Every 3 years	Every 3 years
Competent Person (MGPS)	Every 3 years	Every 3 years
General Nursing staff	Ongoing	

Records of such training must be kept by the appropriate manager

4.4 Record Management

The Head of Maintenance Services will maintain a record of all Authorised Persons (MGPS) appointed for NHS Lanarkshire including date of commencement of appointment and when refresher training and re-appointment is required.

The Coordinating Authorised Person (MGPS) will maintain a record of all Competent Persons (MGPS) employed directly by the Maintenance Services. Competent Persons (MGPS) employed by a specialist contractor, will have a record of their appointment and training maintained by the contractor which will be made available to the Authorised Person (MGPS) upon request.

All MGPS and cylinder management training received by staff will be recorded in the individual's training file. Prior to being considered for appointment as an Authorised Person (MGPS) and Competent Person (MGPS), all persons must have satisfactorily completed an appropriate training course. The assessment will then focus on the person's knowledge of the content of SHTM 02-01 and of their familiarity with the MGPS installed at the respective sites.

The Quality Controller (MGPS) will require to be appropriately trained and appointed. All training received by staff will be recorded in the individual's training file and registered with the Specialist Pharmacy Services (SPS) <u>https://www.sps.nhs.uk/home/guidance/medical-gases/</u>. Prior to being considered for appointment as a Quality Controller (MGPS) all persons must have satisfactorily completed an appropriate training course. The assessment will then focus on the person's knowledge of the content of SHTM 02-01 and of their familiarity with the MGPS installed at the respective sites.

4.4.1 Permit to work (PTW)

Permit to work books should be held in the Maintenance office and controlled by the APs. The current permit book must be readily available for use with previous books required to be archived for the entire life time of the medical gas pipeline system.

4.4.2 As-Fitted Drawings

As fitted drawings are the primary tool of the AP (MGPS) and should be maintained by them at all times. A hard copy is kept in the maintenance department by the CAP (MGPS).



Medical Gas Policy

After all work on the MGPS that involves any modifications, additions or alterations to the system, it is the responsibility of the AP (MGPS) controlling the work to ensure that the as fitted drawings are updated to reflect any change.

4.4.3 Plant log-sheets

Should be completed at every occasion it is necessary to visit plant or manifold installations (e.g. routine maintenance checks or changing cylinders). The completed sheets should be returned to the AP (MGPS) for analysis and stored as a record.

4.5 Reporting Structures

The required management structure and the necessary appointments to support the communication route and management of the NHSL Medical Gas Pipeline Systems are shown in Appendix 1.

In the event of an identified potential hazard there is a defined NHSL structure to ensure that the relevant departments can effectively investigate and manage the situation. The communication links within the structure are shown in Appendix 2.

The continuous monitoring of the effectiveness of policy and the management procedures for the management of MGPS systems is assessed by the NHSL Medical Gas Committee. The reporting structure to Clinical and Corporate Governance is shown in Appendix 3.

PFI communication and reporting involves the Special Purposes Vehicle (SPV) and the FM Provider, this is defined in Appendix 2.

4.6 Policy Development & Consultation

Development of the policy has been undertaken by the Director of Pharmacy in consultation with the Medical Director, Quality Controller and Lanarkshire Medical Gas Committee.

4.7 Implementation

Following endorsement by the Corporate Management Team the policy will be displayed on the NHSL's intranet (Firstport). The raising of Policy awareness will be carried out via induction and mandatory training, Risk Management, Occupational Health & Safety, Divisional Management Team, Capital Planning and Projects Liaison Meetings

5 Roles and Responsibilities

NHS Lanarkshire Board has a mandatory requirement to take all steps to minimise the risks to which patients, staff and others are exposed, as a result of the Board's undertakings.

5.1 Accountabilities and Responsibilities Management Appointment Structure

5.1.1 The Chief Executive (Executive Manager) is responsible for the NHSL wide implementation of this policy, ensuring that sufficient resources are available to maintain and manage medical gas pipeline systems.

The Chief Executive shall delegate the responsibility for the overseeing the safe operation of the medical gas pipeline systems processes to the Director of Planning, Property and Performance (Deputy Executive Manager).

The Chief Executive has overall responsibility for the implementation, monitoring and review of this policy; this responsibility is delegated to the Medical Director.

5.1.2 The Executive Director

The Chief Executive shall delegate the responsibility for the overseeing the implementation of the safety and risk management strategy throughout the NHS Lanarkshire to the Medical Director.

- 5.1.3 Director of Pharmacy (Chief Pharmacist) is responsible for:
 - Quality Controller (QC) activity they will accept the duties and responsibilities identified in the QC section of this policy in addition to the following pharmacy responsibilities.
 - Duties and responsibilities of the Chief Pharmacist pharmacy department:
 - the safe prescribing of medical gases as drugs;
 - ordering supplies of cylinders of medical gases and special gas mixtures for the NHSL;
 - receiving delivery notes for compressed gas cylinders and liquid oxygen, check against invoices received and pass invoices for payment;
 - maintaining a record of cylinder rental charges and pass rental invoices for payment;
 - examining and archive any "Certificates of Analysis" for medical liquid oxygen and unlicensed medical gases as are made available to the NHSL by medical gas suppliers;
 - ensuring that cylinders and piped medical gases purchased by the NHSL are either licensed medicines or are unlicensed medicines prepared under an appropriate MHRA manufacturing license;
 - ensuring that other gases and gas mixtures comply with manufacturers' product licenses;
 - assuming responsibility for the quality control of medical gases throughout the MGPS; and
 - emergency ordering of additional supplies of cylinders when advised of requirements by nursing/clinical staff, porters or maintenance department.
- **5.1.4 The General Manager PSSD (Designated Person MGPS) is** responsible for the integrity of MGPS installation across NHSL premises (including PFI/PPP sites) through the implementation of proper work procedures and the appointment of competent personnel.
- **5.1.5 The Deputy Director (Operations) (Deputy Designated Person)** is technically, professionally and managerially responsible for the engineering aspects of MGPS installation across NHSL premises.
- **5.1.6 The Deputy Director (Projects & Assurance) (Deputy Designated Person)** is technically, professionally and managerially responsible for the engineering aspects of MGPS installation across PFI/PPP sites.
- **5.1.7 The Head of Maintenance Services**, (**Operations Manager MGPS**) is responsible for the integrity of the MGPS installed across their area of responsibility. Ensuring that robust Safe System of Works (SSOW) and Written Schemes are in place & the appointment of competent contractors. The Authorised Person (MGPS) will report to the Head of Maintenance Services on a regular basis.
- **5.1.8 The Authorising Engineer (MGPS)** will be appointed by the Director of PSSD (Designated Person MGPS). This person will act as an independent professional

advisor to the NHSL Board, to ensure that the organisation provides a safe operation and manages the services in accordance with the SHTM02-01 guidance and other Legislative/SGHD publications.

The Authorising Engineer (MGPS) acts as an assessor, making recommendations to the Designated Person (MGPS), on the appointment of the Authorised Persons (MGPS).

The Authorising Engineer (MGPS) will conduct regular audits to monitor the performance of the service and provide an annual report to the NHS Board's Designated Person.

The Authorising Engineer (MGPS), will undertake the following duties

- to recommend to the Designated Person (MGPS) those persons who, through individual assessment, or reassessment, are suitable to be Authorised Persons (MGPS);
- to ensure that all Authorised Persons (MGPS) have satisfactorily completed an appropriate training course;
- to ensure that all Authorised Persons (MGPS) are re-assessed every three years and have attended a refresher or other training course before such re- assessment;
- to review the management systems of the MGPS, including the permit-to-work system;
- in liaison with the Authorised Persons (MGPS), monitor the implementation of the MGPS operational policy and procedures.
- to provide NHSL with an accessible source of MGPS expertise, in support of the Authorised Persons (MGPS).
- **5.1.9 Coordinating Authorised Person (CAP), (MGPS)** will act as the overall lead and will co-ordinate the actions of the other Authorised Persons (MGPS). The Coordinating Authorised Person will ensure that there are sufficient Authorised Persons available to cover any instances of sickness or leave.

5.1.10 Authorised Person (MGPS) is responsible for:

- The safe and efficient day-to-day management of the MGPS system, in accordance with NHSL policy & procedures all statutory requirements, current guidelines and best practice;
- ensuring that the NHSL's MGPS are managed and maintained in accordance with SHTM 02-01, and the NHSL's maintenance specification;
- managing the permit to work system (MGPS), including the issue of permits to Competent Persons (MGPS) for all servicing, repair, alteration and extension work carried out on the existing MGPS;
- the supervision of the work carried out by Competent Persons (MGPS);
- organising such training of maintenance staff (and other staff if requested) and / or transfer of MGPS information, as required;
- liaising with Designated Medical/Nursing Officers, Pharmacist and the Quality Controller (MGPS) and others, who need to be informed of any interruption or testing of the MGPS;
- providing technical advice to those responsible for the purchase of any medical equipment which will be connected to the MGPS;



- ensuring that a formal agreement is in place for all medical gas testing to be quality control tested by the NHSL's appointed QA Pharmacist
- **5.1.11 Medical Gas Committee (MGC)** reports to the Acute Clinical Governance & Risk Management Group and in turn they report to Safety Quality and Standards Committee. The MGC to communicate and monitor the MGPS policy and procedures to enable the effective management of MGPS activities.

Membership of the committee will include representation from clinical and non – clinical directorates. Core members are:

- Director of Pharmacy (Chair)
- Medical Director
- Head of Maintenance Services
- Monklands Maintenance Manager (CAP)
- Deputy Director of PSSD (Operations)
- Head of PFI/PPP
- Quality Controller (QC)
- Authorising Engineer (MGPS)
- Head of Health & Safety
- Designated Nursing Officer
- Chief Pharmacy Technician(Monklands)
- Head of Technical Services
- Consultant Anesthetist

5.1.12 Competent Person (MGPS) are responsible for carrying out;

- only work as detailed on the permit including final connections;
- repair, alteration or extension work, as directed by the Authorised Person (MGPS) in accordance with the permit to work system and SHTM 02-01;
- appropriate engineering validation and verification tests under direct supervision of the AP; and
- confirm completion of works and notification to AP (MGPS).

Reports to the Authorised Person (MGPS) prior to commencement of work on the MGPS each day and accept instructions from the AP (MGPS).

5.1.13 Quality Controller (QC) (MGPS) are responsible for carrying out:

- Quality control testing of the medical gases throughout the MGPS as requested;
- final identity and quality gas on the system, witnessed by the AP (MGPS);
- quarterly tests for quality and identity of all medical gases manufactured on site in liaison with the AP (MGPS)

and advising the Director of Pharmacy (Chief Pharmacist);

- that gases under their control meet specification;
- of the results of all tests carried out on the MGPS and any other findings that may have impact on patient care; and
- liaising with the Authorised Person (MGPS) in carrying out specific quality and identity tests on the MGPS in accordance with the permit to work system and relevant Pharmacopoeia Standards;
- declaring that testing is complete and that satisfactory results have been



obtained; and

• Quality control testing are completed by sign-off the permit.

5.1.14 Designated Nursing Officer/Designated Medical Officer (DNO/DMO):

- Designated Nursing Officers (MGPS) will be appointed by the Director of Nurses, Midwives and Allied Health Professionals (NMAHPs) and will undertake suitable training for the role.
- It is the responsibility of the Authorised Person (MGPS) to liaise with the DNO (MGPS) when any interruption to gas supplies is to be undertaken.
- NO INTERRUPTION to a medical gas supply can take place without the WRITTEN permission of either a DNO (MGPS) i.e. by signing of an appropriate MGPS permit to work.
- Most work at department/ward level will be authorised by the relevant DNO (MGPS).

During emergency situations it will be the responsibility of the Senior/Charge Nurse to liaise with the Authorised Person (MGPS) to co-ordinate necessary remedial work, which may involve provision of alternative gas supplies etc.

5.1.15 Head of Hotel Services is responsible for:

- The designated porters. They will organise and keep records of the training for the designated porters. They should also undergo the Designated Porter training.
- It is essential that Designated Porters are trained and work safely at all times, using the appropriate Personal Protective and Manual Handling Equipment. Such equipment found to be missing, or defective in any way, must be reported immediately to the portering manager or their deputy.
- **5.1.16 Designated Porter**: is a Porter with particular responsibility for medical gases, more especially, the handling of compressed medical gas cylinders. They will have undergone specialist training in the identification and safe handling and storage of medical gas cylinders, including relevant manual handling training.

The Lead Pharmacy Technician will decide on provision of cylinders for routine and emergency use and will be responsible for the quarantining of defective cylinders and maintenance of delivery records.

Designated Porters (MGPS) will undertake the following duties:

- assist with the delivery of gas cylinders by the supplier;
- deliver full gas cylinders from the 'FULL' cylinder store to wards, departments and manifolds and return empty cylinders to the 'EMPTY' store;
- transfer gas delivery notes from the delivery driver to the Lead Pharmacy Technician.
- identify, and remove from service, faulty (e.g. leaking) or incident (e.g. damaged) cylinders and subsequently notify the Lead Pharmacy Technician of the location of such cylinders;
- perform a weekly check on cylinder stocks and report any deficiencies to the Lead Pharmacy Technician;
- ensure that all cylinder contents are used within the three-year fill/refill timescale specified by the gas supplier.

Medical Gas Policy



• rotate cylinder stock between secondary (emergency) and primary supply manifolds to ensure effective use of gas.

In liaison with the Pharmacy Manager and Head of Hotel Services shall ensure that their respective portering staff have received appropriate manual handling and medical gas safety training and maintain records of such training.

6 Resource Implications

This policy is primarily related to the safe provision and use of medical gas pipeline systems within the NHSL. Failure to meet regulatory standards could lead to imposition of financial penalties, patient harm and reputational damage.

7 Communication Plan

Policy will be launched and distributed as follows:

- Staff brief
- Electronic launch through dissemination by Medical Director, Associate Medical Director, Divisional Nurse Director and Director of Pharmacy to medical, nursing and pharmacy staff
- The Policy will be available on the 'Policies' section on First Port



8 Quality Improvement – Monitoring and Review

It is the responsibility of all Directors, managers and employees to ensure compliance with the Policy: -

• In the case of e.g. unreasonable behavior being observed when challenging others, repeated breaches of the Policy, a Datix Incident Form should be completed if indicated to ensure the incident is duly recorded. The facts of the incident should be reported to the Director of Pharmacy (Chief Pharmacist).

8.1 Monitoring

Arrangements for monitoring the effectiveness of this policy and compliance with SHTM 02-01 for each site shall be put into place by the Heads of Maintenance Services.

Where monitoring identifies deficiencies, recommendations and action plans will be developed and any required changes implemented accordingly. The results of each monitoring exercise and progress on these actions will be reported to the Medical Gas Committee;

Checks will be carried out by

- Compliance audits of documentation maintained by the Authorising Engineer
- compliance audits to ensure the MGPS processes are carried out as described in the MGPS management procedures,
- reviews carried out on regular basis by the Authorised Persons.

Non-compliance issues and associated risks will be reported by Maintenance Services to the Medical Gas Committee.

8.2 Audits

The NHSL Medical Gas Committee shall ensure that an annual MGPS audit is carried out on the MGPS management arrangements for each hospital site. The scope of the audit will be agreed by the NHSL Medical Gas Committee.

NHSL Authorising Engineer is commissioned under SHTM02-01 to carry out the annual audit.

8.3 Reviews

The NHSL Medical Gas Committee will carry out an annual review of the PSSD management arrangements and make recommendations, where appropriate, to further develop the MGPS Management Strategy, and to facilitate continual improvement and good practice.

The NHSL Medical Gas Committee will review this Policy every 3 years, or when circumstances dictate.

9 Equality Impact Assessment

NHS Lanarkshire is committed to ensuring that, as far as is reasonably practicable, the way we provide services to the public and the way we treat our staff reflects their individual needs and does not discriminate against individuals or groups on any grounds. This policy has been appropriately assessed.



This policy meets NHS Lanarkshire's EQIA



Document B has been completed and a copy has been sent to <u>Hina.sheikh@lanarkshire.scot.nhs.uk</u>

10 (FAQs)

There is no requirement for a FAQs list to be read in conjunction with this Policy

11 Archival of Documents

When a corporate policy is created by NHS Lanarkshire it becomes an official document and policies must be controlled within the principles for archiving, retention and destruction contained in Scottish Government circular

As an NHS Lanarkshire Board record, corporate policies must be retained permanently and will be managed through the Knowledge Services. The archive is kept within Firstport. Please email <u>corporatepolicies@lanarkshire.scot.nhs.uk</u> if you need access to any of the archived documents



12 References

- a. Health and Safety at Work etc. Act, 1974
- b. Management of Health and Safety at Work Regulations
- c. Work Place (Health, Safety and Welfare) Regulations
- d. Provision and Use of Work Equipment Regulations
- e. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
- f. Control of Substances Hazardous to Health (COSHH) Regulations
- g. Pressure Equipment Regulations
- h. Pressure Systems Safety Regulations,
- i. Human Medicines Regulations 2012
- j. Manual Handling Operation Regulations,
- k. Personal Protective Equipment at Work Regulations
- I. Electromagnetic Compatibility Regulations
- m. Electricity at Work Regulations
- n. Scottish Health Technical Memorandum 02 01Part A
- o. Scottish Health Technical Memorandum 02 01 Part B
- p. Scottish Health Technical Memorandum 08-01
- q. No 1 "Dental Compressed Air and Vacuum Systems" 2003
- r. No 2 "Piped Medical Gases in Ambulance Vehicles" 1999
- s. European Pharmacopoeia Standards for medical gases, including medical compressed air.
- t. BS EN ISO 7396 Part 1 and 2,
- u. BS EN ISO 9170 Part 1 and 2.







Appendix 2

Escalation and Communication Structure for the Identification of a Potential Hazard





Appendix 3 NHSL Medical Gas Committee Corporate Governance

