SECTION 8

Equipment management

Contents

8.1 Overview of equipment management

The primary purpose of having an equipment maintenance system is to ensure the safety of clients and carers during use by making sure all moving and handling equipment is fit for use and kept in efficient working order. The useful working life of equipment can be extended through regular scheduled checks and maintenance. This section provides a set of guidelines for equipment maintenance that can be adapted as required. This section on equipment maintenance complements descriptions of the types of moving and handling equipment covered in Section 7.

Equipment maintenance is an organisational responsibility that has implications for engineering, maintenance, procurement, finance and the carers who use the equipment. Client and carer safety depends on the adequate maintenance of moving and handling equipment. Proper equipment maintenance is not only an asset management function, but also a central part of maintaining a culture of safety in an organisation.

The day-to-day management and monitoring of moving and handling equipment may be the responsibility of a manager in facilities, health and safety, engineering or maintenance. Maintenance responsibilities may also be delegated to specific people. Within management systems, there should be clearly negotiated areas of responsibility about who monitors the equipment and its use, who is responsible for carrying out routine checks and maintenance, and who pays for any repair and maintenance costs.

All procurement, maintenance and disposals of mechanical and electrical equipment should be compliant with the Standards New Zealand requirements in AS/NZS 3551:2004 *Technical management programs for medical devices* and with AS/NZS 2500:2004 *Guide to the safe use of electricity in patient care*. These standards cover procurement, the acceptance process, safety and performance testing and disposal.[1] Moving and handling equipment is used in multiple locations in workplaces and homes. Establishing who has ownership of and responsibility for checking and servicing equipment is an important factor in developing a maintenance system.

1. These standards were being revised in 2011. Check for updates.

8.2 Equipment assessment and procurement

Given the wide range of types of equipment and the need to invest time in assessing equipment prior to purchase, it is important for healthcare facilities to provide effective procurement systems for purchasing equipment for moving and handling people.

BOX 8.1

Collaboration for equipment procurement

A collaborative effort involving the procurement committee, staff who will use the equipment, client feedback while trialling equipment, and information from suppliers will usually result in well thoughtout procurement decisions.

Where there is an existing procurement system, such as a procurement committee, the committee should include the person responsible for moving and handling in the organisation. They can provide the knowledge required to make purchases based on clinical needs rather than purely financial factors. It is easy for potential purchasers to be confused by the vast array of client moving and handling equipment with very sophisticated technical features. Purchasers may not be knowledgeable enough to make clinical choices, so should seek expert advice. Organising a priority-based clinical needs assessment tool with the moving and handling person, the carers who are to use the equipment and the procurement section will help to ensure a robust selection process that follows due diligence without compromising clinical requirements.

BOX 8.2

Some key points for equipment procurement

- There are multiple companies in New Zealand that supply equipment for moving and handling people
- There have been major developments in moving and handling equipment in the past 10 years, and equipment technology is developing rapidly
- Robust equipment with advanced features and a range of accessories is generally more expensive but may be more cost effective for long-term use
- When acquiring new equipment, give due consideration to possible future developments for facility use, such as ceiling hoists
- Adequate needs assessments are essential to ensure efficient purchasing.
- Many types of mobile equipment are powered by batteries, so easy access to battery charging is important.

Suppliers are often very helpful in providing information about their own equipment, but remember they are there to make sales. Your organisation should have a robust procurement procedure that avoids costly purchases of equipment that may not

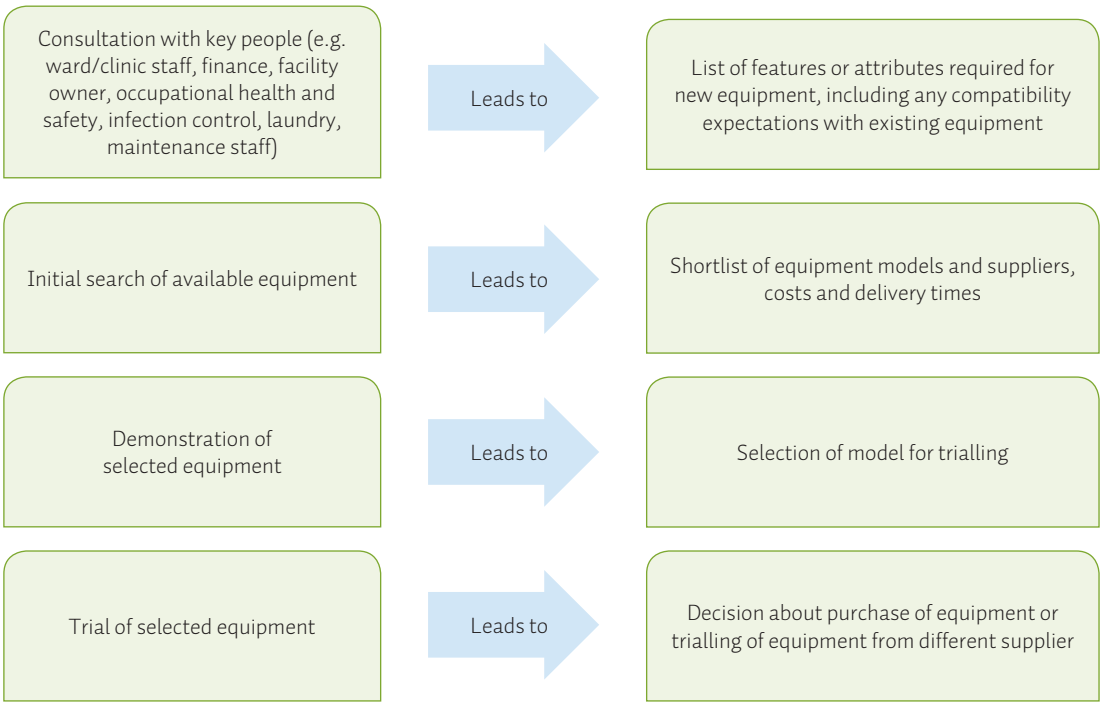
function as intended. In small or limited-budget organisations, staff members can be allocated responsibility for becoming familiar with particular types of equipment. For example, a physiotherapy assistant could look after wheelchairs and other staff could look after commode chairs.

Equipment procurement systems

When selecting equipment for trial, hire or purchase, there are some general considerations to bear in mind. If the proposed equipment order is large or expensive, it is worth putting additional work into the initial consultation and assessment process to increase the likelihood that the equipment will be suitable for its intended purpose.

Figure 8.1 sets out common stages that can be used in preparation for making large equipment orders, especially where a new type or brand of equipment is being purchased. For small orders, or routine replacements of equipment, some parts of the procurement process might be reduced or omitted. However, consultation and initial assessment are always important.

FIGURE 8.1 STAGES FOR EQUIPMENT PROCUREMENT



Consultation

When purchasing equipment, especially during the design or redesign of the work environment, consulting people whose jobs will be affected by the new equipment is essential. The following list provides examples of the people and groups with whom consultation may be useful.

- **Moving and handling coordinator**: Give the coordinator information about the locations, carers and clients using the equipment so they can provide advice on what type of equipment would suit their needs and requirements, such as equipment storage, facility design and maintenance
- **Users of the equipment**: Ask the end users (not usually the manager) what they need the equipment for, what features are most important to them and whether any problems or past history with equipment could serve as lessons learned. Involve them in the equipment selection process and trialling
- **Colleagues or contacts in other health services** and other facilities who have bought the same equipment, have used the same suppliers, or have the same needs and could share the process, making a large resource pool and enabling better bargaining power with suppliers
- **Suppliers of equipment**: In addition to equipment specifications and prices, ask suppliers to provide contact details of other purchasers so they can be contacted for their comments and possible site visits
- **Maintenance and laundry managers** or staff if they will be involved in servicing and maintaining the new equipment
- **Infection control**: For the cleaning requirements of any equipment purchased
- **CPR (cardio-pulmonary resuscitation) staff or committees**: To ensure equipment compatibility with their needs. For example, when purchasing beds, the CPR function in an acute setting is vital
- **Fire officer**: For comments about emergency evacuation equipment or procedures and also to ensure that the installation and use of equipment do not block fire doors or essential exits.

An outcome of the consultation process will be the development of criteria for desired features of the equipment to be purchased.

BOX 8.3

Consultation on electric beds

When our organisation was in the process of buying new electric beds, the procurement people asked for my advice. One of the things I made sure of was these beds should have a manual emergency release – pull a lever and the head of the bed comes down immediately.

Because of my background as a nurse, I know how important the emergency release is when a patient has a cardiac arrest (heart attack) and needs resuscitation immediately. Every second is valuable. If I didn't have a nursing background, I would have recommended that the procurement committee get someone with appropriate nursing experience to be on the committee.

Source: Manual handling coordinator

Initial assessment

The selection process should start with a needs assessment of the task, area and client group. The purchasing team can then contact suppliers and identify all equipment models that perform the desired applications in a reasonable and safe manner. Literature for the specified equipment types should then be requested from each identified supplier or distributor.

Following an initial review of the product literature to eliminate those products that would not be suitable for the intended application, te team can include information on any previously performed or ongoing field- and laboratory-based equipment evaluations as part of the tender process. If the manufacturer has performed the equipment evaluation, not an outside research facility, the evaluation might be biased or incomplete. Conduct a web search for user evaluations and comments on the equipment, and a literature search (for both peer-reviewed and other print media sources, such as industry magazines), to find out more information for specific equipment models.

Another important point for consideration is the adaptability of the equipment being acquired. Decisions should include not only the price or its impressive features. Among the questions that should be asked during the initial assessment process are:

- **Future proofing**: Will the equipment become obsolete if the manufacturer stops providing spare parts, or can generic spare parts be obtained? Will the equipment also serve any changes in the current service or client condition?
- **Compatibility**: Will it be compatible with existing equipment or any procured later?

The following general criteria may be relevant to an equipment assessment:

- **Appropriateness**: The equipment must be 'fit for purpose' and be able to carry out the tasks for which it is intended
- **Accessibility and storage**: Does the building layout in the wards or units for which the equipment is being purchased allow the equipment to be used and charged easily? Can the equipment be stored so it is readily available in the areas to be used? It is generally recommended that storage areas be within 20 metres of handling areas and within 10m of nurse stations
- **Compatibility**: Will the new equipment be used in conjunction with any existing equipment? How will the new equipment integrate with existing equipment and overall clinical systems?
- **Infection control**: Items must be able to be cleaned as recommended by the infection control requirements, particularly when there is a likelihood of direct exposure to skin or body fluids
- **Value for money**: What is the expected useful life of the equipment?

- **Servicing**: Will the equipment require routine servicing? What is the cost of servicing and who will provide it? What qualifications are required to maintain the equipment?
- **Training requirements**: Will the equipment require additional training for staff using it? Will the supplier provide initial training? Will training for the equipment be incorporated in the ongoing training programme for moving and handling people?
- **Funding**: Has the funding allocated included the costs of the purchase process and subsequent training?

Demonstration of selected equipment

Once a shortlist of suppliers has been confirmed, request a demonstration of the equipment, preferably at the facility where it will be used. Invite staff and managers from wards or units where the equipment will be used. At the beginning of the demonstration, give all attendees evaluation forms and ask them to fill them in before they leave. Where possible bring all options into the same room at the same time to allow for comparison.

Trial of selected equipment

Once the top contender has been decided, a useful strategy for large or complex items of equipment, such as mobile hoists, is to ask for a trial of the equipment for a specified period. This allows a more extensive assessment of the suitability of the equipment than is possible with the earlier assessment stages. During the trial, ask for documented feedback. This will assist with information about the equipment's performance and give the participating carers ownership and inclusion in the process.

Hiring equipment

For some facilities, hiring or leasing equipment may be more cost effective than purchasing equipment. If the equipment needed can be hired or leased initially, this will allow a more extensive assessment of the equipment suitability, and it could reduce the financial outlay. Ensure that the hire agreement includes information about the ongoing responsibilities for cleaning and maintenance of the equipment. Allocating responsibility for any replacements following damage or breakdown is also important, along with expected timeframes and any associated costs.

8.3 Equipment register

One of the management tools often used in an equipment maintenance system is an equipment register. This register can be in the form of a logbook, spreadsheet or customised asset management software. Whatever form it takes, it should allow regular monitoring of essential information regarding equipment location, use and maintenance. Decisions about who makes purchasing or procurement decisions, when equipment should be replaced, and how obsolete equipment will be disposed of, are management planning roles.

It is important for all organisations that have more than a few items of equipment to develop and maintain equipment registers. Following confirmation of purchase and delivery to a facility, all equipment items should be given a unique number for entry into the register. In large organisations, the equipment register may be extensive and include a wide range of types of equipment. If there is a combined register of equipment for different purposes, moving and handling equipment should be assigned a specific category, so that all moving and handling equipment can be monitored as a single group. In small facilities a simpler system may be used. Items purchased in large numbers, such as slide sheets and slings, may be entered as groups in the equipment register.

To establish an equipment register it is necessary to develop a list of all moving and handling equipment held by the organisation or facility. Appendix 8.1 shows examples of specific information for an equipment register. The data fields shown in the Appendix table can be reviewed for inclusion in a facility equipment register.

BOX 8.4

Standardisation of equipment storage procedures

Staff rotation between different wards, sections and units is common in many facilities. Standardising equipment procedures and storage for regularly used items will assist staff in locating and using them. For example, slide sheets with loops attached to them could be hung beside clients' beds after allocation, throughout a hospital or residential home, as a standard procedure.

The equipment register is most flexible when created using specialised software. For small organisations with few items of equipment, the register could be developed using existing spreadsheet or database software. Large organisations, where the equipment register contains thousands of items, will most likely acquire or develop customised software. In these organisations, the registers will need to be accessed and updated by multiple users.

Equipment items to enter into the register as a priority should be those that are electrically operated, require scheduled servicing and are used in multiple wards or units. For moving and handling equipment, this includes mobile hoists, ceiling hoists, sit to stand hoists and electric beds. As well as being used to monitor servicing and maintenance requirements, an equipment register is useful for keeping track of the location of equipment and for inventory control for items such as slide sheets and hoist slings.

8.4 Equipment storage

The storage areas and locations required for equipment will depend on the layout of the unit or facility, and on the type and amount of client handling equipment provided.

Equipment should be stored near where it is most used. It should also be readily accessible to staff (i.e. there should not be other things piled on top of it or blocking access to it). Items of equipment used together should also be stored together. For example, slings, mobile hoists and spare hoist batteries should be stored together. Transfer boards should have slide sheets stored with them for ease of use. Equipment that is battery operated, such as mobile hoists and standing hoists, may need storing close to a power point so that the batteries can be charged.

Equipment storage should be organised so that people who use the equipment most often can access it easily. Specific things to consider when planning storage areas are:

- Store items together that are used together (e.g. mobile hoists and slings)
- Slide sheets that are in use should be stored beside clients' beds, either on hooks or in specified locations or containers
- The storage of ceiling hoists should be designed at the time they are installed
- The storage of large items (e.g. mobile hoists, sit to stand hoists) should not block access to small items
- Storage areas need to be located in the ward or unit where they will be used, preferably within 20m of handling areas and within 10m of nurse stations
- Storage areas should not block or reduce access ways
- Storage doorways need to be at least 1,500mm wide
- The useable corridor width between storage areas and handling areas where the equipment will be used should be at least 1,500mm.

BOX 8.5

Mobile hoist access and storage

We keep our mobile hoist in the corridor during the busy periods. It is not ideal but it is easily accessible for staff, and it wasn't getting in anybody's way. Our new manager came along and instructed staff to store the hoist out of sight because it made the place look untidy. He should have asked why it was in the corridor in the first place. The hoist is in constant use during peak hours. It has to be accessible to staff when it's needed otherwise they don't use it, especially as our storage room is a bit out of the way.

Source: Health worker, aged-care facility

8.5 Equipment maintenance

The purpose of maintenance is to ensure that equipment can be operated as intended. Moving and handling equipment ranges from low complexity (such as slide sheets and walkers), through medium complexity (wheelchairs) to sophisticated hoists and electric beds. The maintenance system needed for equipment will be related to its complexity. Maintenance for many types of equipment will typically cover three types of check:

- Visual checks or assessments prior to each use
- More extensive periodic checks
- Scheduled service checks that are carried out by authorised people.

TABLE 8.2 EQUIPMENT TYPES AND MAINTENANCE TASKS

Equipment category	Specific types of equipment	Examples of maintenance tasks
Electrical and mechanical equipment	Mobile hoists Ceiling hoists Electric beds Wheelchairs	Load testing Visual check for any obvious signs of wear and tear and damage Scheduled maintenance list Lubrication and adjustment Check mains supply electric cords Battery check Tilt testing
Fabric transfer aids	Hoist slings Slide sheets	Visual check for frayed and torn sections Laundry system for multiple-use slide sheets and slings Disposal system for 'use with one client only' slide sheets and slings
Other transfer aids	Transfer boards, walking frames	Visual inspection for damage

Where an organisation owns equipment that is on loan to clients, such equipment should be included in the organisation's maintenance programme unless it comes to some other arrangement with the client. For community or home care, moving and handling equipment may be privately owned by a client or their family. Although the owner of the equipment has responsibility for its servicing and maintenance, the carer or other user has a responsibility to carry out a visual check of the equipment prior to each use. Box 8.6 gives an account of an incident that highlights why proper equipment maintenance is essential.

Visual checks prior to use

Prior to using any equipment the carer, or staff person in charge, should carry out a visual check of the equipment. Equipment should not be used if there is any indication that it may be faulty or not safe to use. Fabric handling aids, such as slide sheets and hoist slings, should be checked for tears, loose stitching, soiling and dampness.

Visual checks of electrically operated equipment and equipment with moving parts may include the following:

- The equipment has a current certificate of fitness where relevant
- The designated safe working load (SWL) is shown on the equipment and the weight of the person being lifted does not exceed the SWL
- All parts and accessories needed to operate the equipment are present
- The wheels move freely
- The brakes work
- The battery has sufficient charge and the location of a spare battery is known
- The handset (remote control) works
- In relation to electrical wiring, there are no bare wires or damage to sockets
- There are no visible signs of damage to the equipment
- There is no visible soiling, contamination or leakage.

Periodic checks

Periodic checks are those that are more extensive than visual checks prior to use but not as extensive as scheduled maintenance checks. They may be carried out every few months at the direction of the equipment manager for the wards or units where the equipment is used. Equipment may also need to be cleaned, decontaminated and dried in accordance with current infection control practices and the manufacturers' instructions.

Periodic checks also cover disposable items such as slide sheets that are supplied and cleaned by a contractor. The contract should stipulate which party is responsible for quality control and maintenance checks to ensure that the equipment is supplied ready to use.

Scheduled maintenance checks

Electrically operated equipment and equipment with moving parts, such as hoists and wheelchairs, should be examined and serviced at scheduled intervals by competent people. The frequency of scheduled maintenance should be consistent with the relevant New Zealand standard[2], the manufacturers' recommendations and how often the equipment is used.

2. AS/NZS 3760:2010 *In-service safety inspection and testing of electrical equipment.*

Routine maintenance for mechanical or electrically operated equipment is likely to require the following tasks:

- Check for wear, tear and defects
- Lubrication where needed
- Adjustments to the equipment
- Battery capacity for equipment with rechargeable batteries
- Replace worn out and damaged parts
- Replace parts (which have use-by dates) before expiry dates
- Cleaning and decontamination (if needed)
- Fitness certificates with expiry dates are updated
- Updating of the service schedule in equipment register.

BOX 8.6

The wheels fall off

As a woman was pushed down the road in a wheelchair, a wheel came off unexpectedly. The woman fell into the path of oncoming traffic. Although she was fortunate to survive the accident unscathed, it had the potential to cause serious harm to her and her carer. The wheelchair was on loan from the local District Health Board. The wheelchair had not been serviced or maintained prior to the accident.

Source: District health board employee's account of an actual event

For equipment such as hoists it is recommended that an examination scheme be part of scheduled maintenance. An examination scheme involves a checklist and specific testing requirements carried out as part of scheduled maintenance checks. The examination scheme should be designed to fit the operating conditions of a specific type of equipment, and:

- Should identify the parts of the equipment to be examined thoroughly
- Can cover a number of similar items subject to the same operating conditions and similar levels of use
- Can be drawn up by the user, owner, manufacturer or some other person, as long as they have the necessary competence
- Should be reviewed regularly, following each examination and after any event that may alter the risks associated with the equipment.[3]

3. Adapted from Health and Safety Executive (UK), 2008.

8.6 Replacing and upgrading equipment

Organisations should develop policies and assessment criteria related to replacing and upgrading moving and handling equipment. These should include purchasing and leasing new equipment to replace obsolete items and replacing worn and damaged equipment, or parts such as slide sheets, slings, batteries and motors on hoists.

Replacing obsolete equipment with new equipment should be done after an assessment by a competent person (such as an equipment coordinator) and consultation with staff using the equipment. The replacement and upgrading of equipment could also be discussed with suppliers before the equipment is purchased. Check with suppliers regarding the availability of parts and the costs of replacement or upgrading.

8.7 Disposing of equipment

When equipment becomes obsolete, is not suitable for use for a variety of reasons (damaged, can be used but parts need replacing, making it cheaper to buy new equipment, etc) or is surplus to requirements, there should be a way to dispose of it.

Where possible, recycle equipment by giving it to other organisations or individuals in the community who can make use of it as long as it is safe to do so; otherwise it must be destroyed. The recipient must be informed of what needs to be carried with the equipment (e.g. replace a part) before it can be used again, if such action is required before use. Equipment marked for disposal can also be used as a source of spare parts.

For equipment that cannot be repaired and reused, such as slings and slide sheets, a disposal system is needed. Such equipment should be disposed of as recommended by the manufacturers. Check with the suppliers or manufacturers on how 'dead' batteries can be disposed of safely. Most batteries contain toxic materials and should not be sent to landfills.

References and resources

Enos, L. (2008). *Safe Patient Handling – Equipment Purchasing Checklist*. Oregon Coalition for Health Care Ergonomics (OCHE). Retrieved 22 March 2011 from http://hcergo.org/Equipment%20checkilist%20guide%20for%20SPH%20programs%202008.pdf.

Health and Safety Executive (UK). (2008). *Thorough Examination of Lifting Equipment*. (Leaflet INDG422.) www.hse.gov.uk.

Standards New Zealand, AS/NZS 3551:2004 *Technical management programs for medical devices*

See www.standards.co.nz.

Standards New Zealand, AS/NZS 3760:2010 *In-service safety inspection and testing of electrical equipment*. See www.standards.co.nz.

United Kingdom legislative standards on equipment maintenance (*The Provision and Use of Work Equipment Regulations 1998*). www.legislation.gov.uk/uksi/1998/2306/contents/made.

Appendix 8.1 Information for inclusion in an equipment register

Data field in register	Purpose and comments
Equipment type	e.g. ceiling hoist, mobile hoist, wheelchair
Brand or model	Manufacturer's name and model details
Supplier	Name and contact details of company supplying equipment
Acquisition date	Date purchased or leased (use delivery date to facility)
Serial number	Manufacturer's serial number (if relevant)
Identification number	A unique number supplied by owning organisation (if relevant)
Equipment description	Details of equipment item and any accessories so they can be easily identified (e.g. photo, diagram or written description) and accompanying accessories (e.g. handheld remote control, spare battery)
SWL	Safe working load in kilograms (if relevant)
Warranty	Period of supplier warranty and warranty expiry date (if relevant)
Expected working life	Expected working life of equipment before it needs replacement
Post-purchase check	Person responsible for commissioning equipment, checking it prior to use and ensuring any required labels or stickers (such as SWLs and expiry dates) are present and clearly visible on the equipment
Location	Usual location in organisation and any special storage details (e.g. access to battery charging, slings located in same area as hoists)
Routine servicing	Details of routine servicing needed (e.g. battery charging for hoists, laundry service for slide sheets and slings)
Responsibility for equipment	Name of manager or position responsible for equipment and its allocation to users
Available for loan	Details about whether equipment can be used in other units or loaned to external users
Service schedule	Service period (e.g. six months, 12 months)
Specific service details	Replacement date for specific parts (e.g. batteries) or expiry date after which the equipment cannot be used without a service check
Service provider	Name of person or unit responsible for servicing or name of provider (if externally serviced)
Date of service	Date of most recent servicing
Servicing comments	Specific comments made about the equipment by person doing servicing
Servicing comments	Specific comments made about the equipment by person doing servicing
Specific service requests	Note staff names, dates and types of request for specific requests for servicing or assessments of equipment
Incidents involving the equipment	Details of any incidents (e.g. accidents, near misses) involving equipment, details of equipment failures or design faults and details of any follow-up action needed or taken

Continued ...

Data field in register	Purpose and comments
General comments	Comments from users related to the design and usefulness of the equipment or the specific model – this information may be useful for future purchasing decisions
Equipment disposal policy	Any specific equipment disposal requirements (e.g. disposable slings, slide sheets)
Equipment disposed of	Date, where disposed to and people informed about disposal (if needed)
Equipment replacement	Details about new equipment to replace equipment disposed of