

# HEALTH BUILDING NOTE 52 VOLUME 2

## Accommodation for day care Endoscopy unit

1994

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# Health Building Note 52

Volume 2

Accommodation for day care  
Endoscopy unit

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## About this publication

The Health Building Note series is intended to give advice on the briefing and design implications of Departmental policy.

These Notes are prepared in consultation with representatives of the National Health Service and appropriate professional bodies.

Health Building Notes are aimed at multidisciplinary teams engaged in:

- designing new buildings;
- adapting or extending existing buildings.

Throughout the series, particular attention is paid to the relationship between the design of a given department and its subsequent management. Since this equation will have important implications for capital and running costs, alternative solutions are sometimes proposed. The intention is to give the reader informed guidance on which to base design decisions.

### **Health Building Note 52**

#### **Volume 2**

Volume 2 of HBN 52 focuses on a self-contained, dedicated endoscopy unit for adults and children located in an acute general hospital.

Accommodation is provided for:

- four or five main groups of patient-related activities, including reception and waiting, patient assessment (project option), preparation before procedure, procedure, and recovery and discharge;
- staff;
- storage.

Appendix 2 describes how Volume 1 of HBN 52, 'Day surgery unit', and this volume can be used to plan and design a combined day surgery and endoscopy unit.

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# 1.0 Scope of Volume 2 of Health Building Note 52

## Introduction

1.1 Day care services mainly include day surgery, endoscopy\*, and medical investigations and treatment. Accordingly, this Health Building Note (HBN) -- 'Accommodation for day care' is in three parts:

Volume 1 - Day surgery unit;

Volume 2 - Endoscopy unit;

Volume 3 - Medical investigations and treatment unit (in preparation).

Together, they will replace HBN 38 -- 'Accommodation for adult acute day patients' (1982).

1.2 This volume provides guidance for the planning and design of accommodation for an endoscopy unit in an acute general hospital. Appendix 2 describes in simple terms how Volumes 1 and 2 can be used to plan and design a combined day surgery and endoscopy unit. The option of providing a free-standing endoscopy unit is recognised. Project teams planning a free-standing unit should consider the need for facilities additional to those described in this volume, for example, accommodation which in an acute general hospital would be provided on a whole hospital basis.

1.3 Care has been taken to ensure that the guidance and recommendations for the accommodation described in this volume are as economical as possible without detriment to clinical standards.

## Range of provision

### Inclusions

1.4 This volume describes a self-contained, dedicated endoscopy unit suitable for carrying out endoscopic procedures and treatments in aseptic conditions on adult and child patients. It is suitable for endoscopic procedures and treatments which:

- a. are routinely performed in an acute general hospital;
- b. do not require the high level of "sterile" conditions provided in an operating theatre.

If a specialty requires the general design to be modified or the addition of specialised facilities, project teams will need to decide whether to accommodate the specialty in

the endoscopy unit, and how that should be done, or to make alternative arrangements.

1.5 This volume assumes that most patients who attend the endoscopy unit will be discharged on the same day as they are admitted. It is recognised, however, that patients may:

- a. attend the unit from another part of the hospital during an episode of in-patient treatment;
- b. be admitted to the unit knowing that an overnight stay in another part of the hospital is likely to be necessary in order to complete recovery.

Overnight stay accommodation is not described in this volume.

### Exclusions

1.6 This volume excludes guidance concerning accommodation for:

- a. endoscopic procedures which require to be carried out using sophisticated diagnostic imaging equipment normally found in a radiodiagnostic department, for example, endoscopic retrograde cholangiopancreatography (ERCP);
- b. surgical procedures and medical investigations and treatment which can be carried out more appropriately in accommodation which is the subject of HBN 52 Volumes 1 and 3;
- c. antenatal day care assessment.

## Capricode

1.7 Capricode is the Department of Health mandatory procedural framework governing the inception, planning, processing and control of individual health building schemes. The aim is to promote a consistent and streamlined approach to capital development that achieves best use of resources through the selection and construction of relevant and cost-effective schemes that open on time and within budget. It identifies the main activities and provides a framework for delegation with effective management and the proper accounting for expenditure and performance. (See 'Capricode Health Building Procedures' issued with HN(86)32 in October 1986 (in Wales, WHC(86)62).)

\* Appendix 1 is a glossary which explains the meaning of the word "endoscopy" and a number of associated medical terms.

## Health Building Notes 1 and 2

1.8 HBNs 1 and 2 are an introduction to the planning, design and construction of an acute general hospital. They will be relevant to endoscopy unit project teams.

### Cost allowances

1.9 The Departmental Cost Allowances associated with this volume are promulgated in an Annex to an Estate Executive Letter issued separately.

### Equipment

1.10 Equipment is categorised into four groups, as follows:

- a. Group 1: items (including engineering terminal outlets) supplied and fixed within the terms of the building contract;
- b. Group 2: items which have space and/or building construction and/or engineering service requirements and are fixed within the terms of the building contract but supplied under arrangements separate from the building contract;
- c. Group 3: as Group 2, but supplied and fixed (or placed in position) under arrangements separate from the building contract;
- d. Group 4: items supplied under arrangements separate from the building contract, possibly with storage implications but otherwise having no effect on space or engineering service requirements.

Group 1 items are provided for in the cost allowances associated with this volume. The Equipment Cost Allowance Guide (ECAG) specifies a sum of money for Group 2 and 3 items.

## Works Guidance Index

1.11 This volume contains guidance that is current at the time of publication. Specific issues such as arrangements for dealing with fire, security, energy conservation, etc are covered by other published guidance which must also be taken into account. Some aspects of the guidance in this volume may from time to time be amended or qualified. Project teams should check the current edition of the Works Guidance Index and ensure that they investigate the possibility of changes occurring after the latest published Index.

## 2.0 General service considerations

### Introduction

**2.1** This chapter considers the case for endoscopy and service issues related to the provision of an endoscopy unit, including the need for the unit to be self-contained and dedicated, children and endoscopy, the size of a unit, and relationships with whole hospital services.

### Classification of hospital patients

**2.2** Hospital patients can be classified into three main categories:

- a. in-patients -who stay in hospital overnight;
- b. out-patients -- who attend for consultations, examinations, investigations and minor procedures and leave as soon as these are finished;
- c. day patients -who do not require an overnight stay but need a short period of time after a procedure for recovery. Day patients may stay in hospital for a morning, an afternoon or for the whole of the working day.

### The benefits of endoscopy as a day care service

**2.3** A service for diagnostic and therapeutic endoscopies performed on a day basis is considered:

- a. by many **patients** to be preferable to an in-patient service on the grounds that:
  - (i) appointments may be booked and arranged in relation to the patient's domestic and work commitments;
  - (ii) the service is programmed independently of other hospital services and, therefore, is more likely to remain free from disruption;
  - (iii) it is perceived as less threatening than an in-patient procedure, particularly by children;
- b. by **clinicians** to provide a discrete opportunity for scheduling similar straightforward procedures;
- c. by **managers**:
  - (i) to be a cost-effective and efficient use of resources;
  - (ii) to reduce waiting times for certain procedures and waiting lists for in-patient admissions.

### The development of endoscopy

**2.4** The number of patients treated as day cases during the 10-year period since the publication of HBN 38 -- 'Accommodation for adult acute day patients' in 1982 increased dramatically, and it is expected that massive growth of day care services will be one of the most significant developments in the NHS over the next few years.

**2.5** Factors which have influenced the development of day care services include:

- advances in health technology, notably in sedatives and local anaesthetics, fibre-optics, video endoscopy and the application of computers;
- an increasing demand by patients for prompt action following consultation;
- the drive towards the cost-effective and efficient provision of services, with reduction of waiting times and improved levels of quality.

### The self-contained and dedicated endoscopy unit

**2.6** It is possible to carry out endoscopy in different settings. The two essential requisites are an endoscopy room in which to perform the procedure and a space where patients can recover fully prior to discharge.

**2.7** This volume describes an endoscopy unit which:

- a. is self-contained. Patients may be admitted to, treated in, and discharged from the unit. They will normally not need to attend any other department in the hospital on the day of their treatment;
- b. is dedicated for endoscopy only. It is not intended that the unit should be used for:
  - (i) "parking" patients treated elsewhere in the hospital;
  - (ii) overnight stay of accident and emergency patients or "overflow" in-patients;
- c. may be used for endoscopic procedures on in-patients.

**2.8** In respect of day surgery, the Audit Commission report 'A Short Cut to Better Services', October 1990, states: "Several of the advantages of day surgery ... rely on the provision of self-contained, dedicated day-case

units.” Referring to this report and to the NHSME report ‘Day Surgery: Making it Happen’, 1991, the National Audit Office report ‘Use of National Health Service Operating Theatres in England: a Progress Report’, March 1991, states:

- a. “Both studies emphasised in their reports that a dedicated day unit offered the best prospect for maximising the number of patients treated and minimising the cost per patient”;
- b. that the NHS should “plan for more dedicated day units where these can be shown to be a good investment”.

Similar rationale applies with regard to the provision of an endoscopy unit or a combined day surgery and endoscopy unit.

**2.9** The self-contained, dedicated endoscopy unit described in this volume enables endoscopy to be provided more efficiently than in non-dedicated facilities (for example a dedicated day ward or endoscopy beds in in-patient acute wards, with patients treated in operating theatre facilities in the hospital’s main operating department). Patients’ needs, workload and speed of throughput in an endoscopy unit are different from those in a main operating department. An endoscopy unit for day patients, therefore, should not be planned as part of the main operating department nor with the intention of sharing facilities in the main operating department.

**2.10** A self-contained, dedicated endoscopy unit is able to:

- a. provide individualised care for patients;
- b. be organisationally independent and manage its resources and workload in a planned programmed manner;
- c. generate its own ethos.

**2.11** The endoscopy unit should be capable of accommodating a range of specialties and procedures, including those listed in Appendix 1. Developments in the field of endoscopy will continue to extend the types of procedures which can be carried out on a day basis.

## Patients with special needs

**2.12** Special arrangements may be necessary for particular groups of patients, for example, children and people with learning disabilities.

## Children and endoscopy

**2.13** A main principle of the Department of Health report ‘Welfare of Children and Young People in Hospital’

is that “Children are admitted to hospital only if the care they require cannot be as well provided at home, in a day clinic or on a day basis in hospital.” The report states that “Day care can make a valuable contribution to family-centred health care by reducing the occasions when it is necessary for a child to be admitted overnight in hospital”, and advises that “the child is neither admitted nor treated alongside adult patients ... the environment is suitably laid out and furnished with easy access for people with disabilities and an area where children can play before and after treatment.”

**2.14** The Caring for Children in the Health Services (CCHS) report ‘Just for the day’ provides a full account of issues to be addressed in the management and delivery of day care for children.

**2.15** Endoscopy units should be designed so that carers can accompany child patients for as much as possible of their attendance.

**2.16** Segregation of child patients and adult patients can be achieved in a number of ways: four options for consideration by project teams are described below. Options 1 and 2 ensure segregation, but whether or not they are appropriate for implementation will need to be determined locally, taking account of such factors as the numbers and case mix of children to be admitted.

### Option 1 – a dedicated children’s unit

**2.17** A dedicated children’s unit is the preferred option of the CCHS report. For most hospitals, a dedicated children’s endoscopy unit will not be viable. Consideration may be given to the provision of a combined children’s day surgery and endoscopy unit.

### Option 2 – a dedicated children’s session

**2.18** A session may be arranged in an otherwise adult endoscopy unit for children only. For this option to be viable, a sufficient number of children will need to be treated during sessions arranged on a periodic or occasional basis, as appropriate. Areas attended by children and their carers should be temporarily converted to provide an appropriate environment.

### Option 3 – concurrent children’s and adults’ sessions

**2.19** Concurrent children’s and adults’ sessions need to be organised with sensitivity. Visual separation of child patients and adult patients should be provided and auditory separation achieved wherever possible. Communal areas for patients will need to be carefully divided: this implies the use of movable screens or other appropriate forms of separation within main waiting and pre-discharge recovery areas.

### Option 4 - limited use of unit by children

**2.20** This option involves use of the unit by children for the endoscopic procedure only. Children are admitted to the day care ward of the children's department and returned there, following endoscopy, for recovery and discharge. The endoscopy unit may need facilities to accommodate children on arrival and prior to return, and to be connected to the main hospital circulation route.

**2.21** Medical opinion on Option 4 is polarised. It is pointed out that endoscopy for adults should be provided in an environment which is domestic, friendly and as non-clinical as possible, and that it is at least equally important to achieve this objective for children. On this basis, it is considered unacceptable to move children between the children's department and the endoscopy unit. The alternative point of view demands total visual and auditory separation of child patients and adult patients in the endoscopy unit and foresees difficulties in achieving this in Option 3; Option 4, therefore, is preferred to Option 3.

### Sizing an endoscopy unit

**2.22** The number of endoscopy rooms required in an endoscopy unit may be calculated as described in Appendix 3.

### Functional relationships

**2.23** This volume describes an endoscopy unit in an acute general hospital. Locating an endoscopy unit in an acute general hospital:

- a. facilitates attendance of in-patients for endoscopic procedures;
- b. provides direct access to the full range of support services;
- c. facilitates admission of patients if necessary

### Clinical services

**2.24** It is assumed that clinical service departments in an acute general hospital will be responsible for the provision of appropriate clinical services to the endoscopy unit.

### Education and training

**2.25** A seminar room is required where education and training sessions can be held for staff working in the unit. The seminar room may also be used by visiting students. A closed-circuit television system with full two-way audio links from the endoscopy rooms to the seminar room and

facilities for video-recording endoscopic procedures should be provided.

**2.26** Additional space should be provided for the teaching of undergraduate medical students, if necessary. Reference should be made to the Department's letter DS 65/74 about teaching hospital space requirements, issued on 22 March 1974, and letter DS 86/74 dated 27 March 1974. (In Wales, reference should be made to letter HSD 3/57/1 dated 29 April 1974.)

**2.27** Teaching requiring special facilities should take place in a postgraduate medical centre, or in a hospital education centre, although some teaching may take place within the endoscopy unit.

## Information management and technology

**2.28** Information management and technology (IM&T) is fundamental to the successful operation of an endoscopy unit. Systems selected should offer a wide range of facilities, and be consistent with local and NHS IM&T strategies.

**2.29** Figure 1 illustrates a comprehensive IM&T network for an endoscopy unit: a glossary which explains the meaning of the terms used on the figure is included as Appendix 4. However, choice of systems and matters such as the location of computer terminals, which functions to include on the system, and access levels to information, should be determined locally. Examples of data handling needs which would be met by installation of a network such as that shown on Figure 1 include:

- a. within the unit:
  - (i) maintaining the appointment system;
  - (ii) operating a patient management system;
  - (iii) managing endoscopic procedure sessions and lists;
  - (iv) providing management information, including clinical audit;
  - (v) managing materials;
  - (vi) managing statistical information, including feedback from patients, general practitioners and district nurses;
- b. with other hospital departments:
  - (i) making appointments from, say, the out-patients department;
  - (ii) transmitting urgent results from the pathology department;

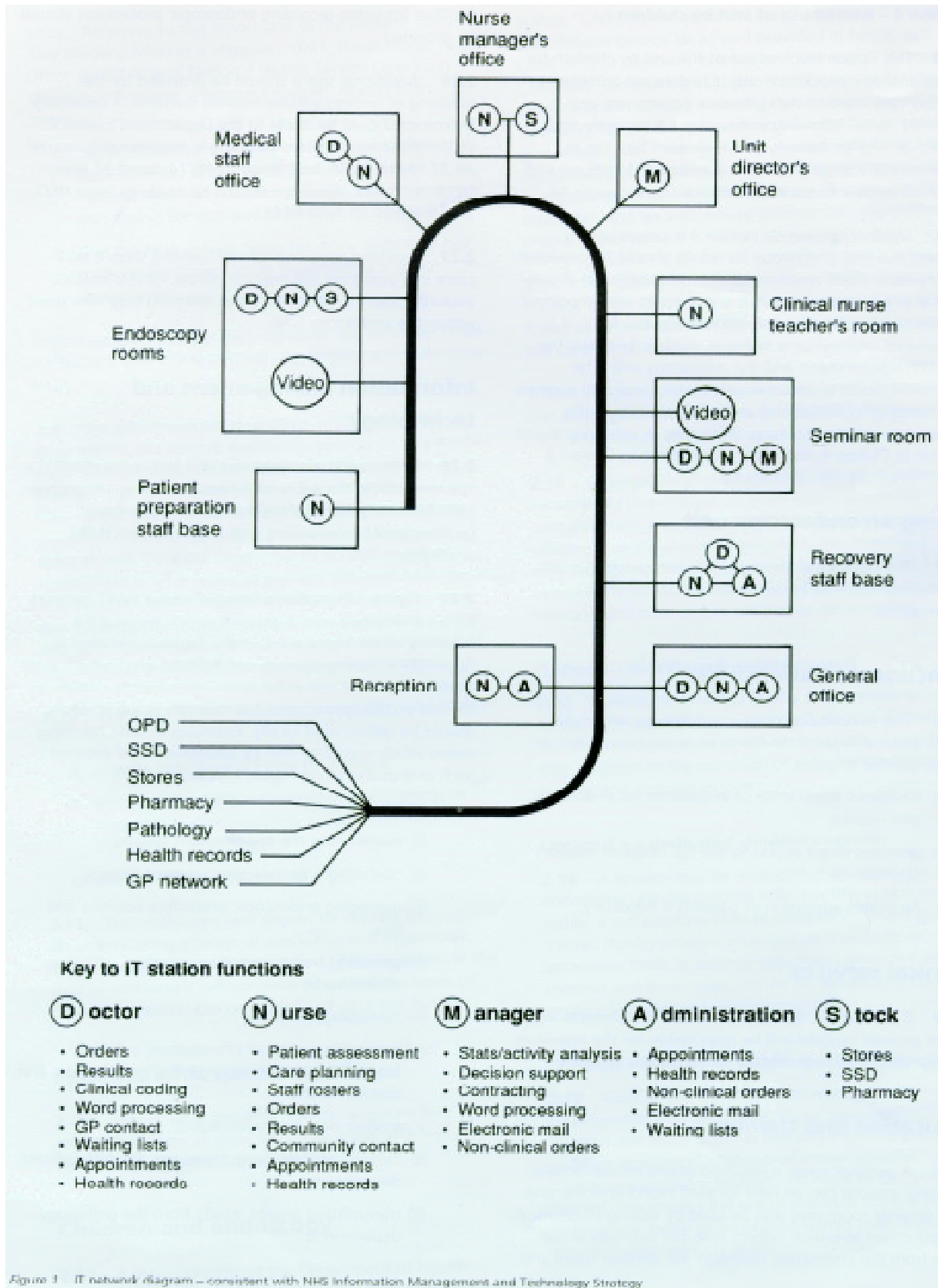


Figure 1 IT network diagram – consistent with NHS Information Management and Technology Strategy

- c. with patients:
  - (i) confirming appointments;
  - (ii) final checking that patients still plan to attend;
- d. with general medical practitioner, advising results of endoscopy and requesting follow-up visit;
- e. with district nurse, requesting visit before and/or after attendance at the unit.

**2.30** Visual display terminals (VDTs) and printers linked to computers are now widely used in hospitals. Project teams should:

- a. consider the computer needs of the unit;
- b. appraise themselves of the state of technological developments;
- c. check that proposals conform with local computing policies.

**2.31** Sufficient space should be provided at the design stage to meet the anticipated need for special power supplies, modems, VDTs, printers and associated software, stationery, and wireways for data transmission cabling.

**2.32** Matters of concern include:

- a. space - computer workstations must have sufficient and convenient space for appropriate equipment;
- b. visibility - since the brightness of the text displayed on the screen of a VDT cannot exceed a certain limit, special attention must be given to the ambient lighting to ensure that the contents of the screen are legible;
- c. noise - while much has been done to reduce the noise of printers by improved design of the moving parts and of acoustic hoods, no printer is silent. For some environments, expenditure on quieter printers, or on means of quietening noisy printers, can be justified. Alternatively, printers may be located in a room where noise is not an issue;
- d. confidentiality - the screen of a VDT should be sited so that the displayed text is not visible to members of the public;
- e. security - provision should be made for the security of data and devices.

## Health records services

**2.33** It is assumed that the health records department in the hospital will be responsible for the safe custody of case notes and for the provision of a health records service to the endoscopy unit in a similar way to clinics in the out-patients department.

## Materials handling: supply, storage and disposal

**2.34** Project teams should give careful consideration to supply, storage and disposal systems. The quantity and distribution of storage space can only be specified in terms of known policies.

**2.35** Project teams should consider:

- a. Whole Hospital materials handling: supplies, storage and disposal policies. The frequency of deliveries, the amount of storage space required in the unit and the delivery and storage policy of the supplying department, are interrelated. The lower the frequency of delivery, the greater the capital outlay on working stocks. This is particularly significant in respect of items reprocessed by the sterile services department (SSD);
- b. the types of item supplied, for example sterile supplies, office supplies, catering supplies and clean laundry;
- c. delivery and collection points;
- d. the volume and location of storage spaces (including spaces where items are held awaiting collection for reprocessing or disposal);
- e. specialised storage requirements, for example for pharmaceutical supplies (especially Controlled Drugs).

**2.36** Control of stock, which may require computer support, increases efficiency and can effect appreciable reductions in costs. The value of a departmental stores management system will be enhanced if it can be linked to an existing hospital materials handling system.

**2.37** Organising an efficient and economical system for supply, storage and disposal is demanding and complex. Systems and timetables for ordering supplies, for delivery and for disposal should be devised and agreed with appropriate organisations external to the hospital and with the managers of relevant hospital departments, including hospital stores, SSD, pharmacy, laundry, catering and portering services. Good working relationships and communications with other hospital departments are of fundamental importance.

**2.38** Disposal of pressurised containers requires special attention - see SAB(88)79 - 'LPG Aerosol Containers: Risks arising from storage, use and disposal'. Specially constructed containers (see BS7320:1 990) should be used for "sharps", particularly needles. Use of sharps containers minimises the risk of injury to staff, particularly portering staff handling waste for incineration.

## Sterile services

**2.39** An SSD may provide a service to the endoscopy unit which includes cleaning and disinfecting specific items of medical equipment and, when agreed locally, the scheduled servicing needs of the medical equipment being cleaned and disinfected in the SSD.

**2.40** Facilities will be required in the endoscopy unit for cleaning, disinfecting and securely storing endoscopes not suitable for processing in the SSD and automatically emptying, cleaning and disinfecting suction bottles.

## Staff change

**2.41** Staff who wear uniforms may change from outdoor clothes into hospital or unit uniforms in changing accommodation located within the unit, or elsewhere in the hospital, as determined by local policy.

**2.42** If changing accommodation elsewhere is used, it will be necessary to provide within the unit:

- a. small lockers for secure storage of small personal items;
- b. toilet facilities.

**2.43** This volume assumes that all staff who need to change will do so in the unit, and describes changing accommodation, including staff change/locker rooms, showers and WCs for use by staff.

**2.44** It is essential that project teams assess as accurately as possible the expected local usage of staff change/locker rooms. The following issues require particular attention:

- a. the total number of users. Account should be taken of part-time as well as full-time staff;
- b. the greatest number of users present at one time;
- c. the number of "permanent" users and of "occasional" users;
- d. the proportion of the total contributed by each sex;
- e. the policy for the allocation of lockers, that is, personal or shared use.

**2.45** Experience suggests that it is advisable for staff permanently employed in the unit to be assigned personal lockers. If training courses are regularly held in the unit, some lockers should be reserved for students.

## Domestic services

**2.46** A domestic services manager (or equivalent if the service is contracted out) will be responsible for organising the unit's domestic cleaning services. Most of the work will be carried out by domestic services staff based in the unit. It is assumed that some work will be carried out by a Whole Hospital team when the unit is not in use.

**2.47** Accommodation is required in the unit where cleaning equipment can be stored and cleaned, and as a base for domestic services staff. The size and content of the space will be determined by the scope and extent of the services provided from it, as determined by the Whole Hospital policy. The type and number of items of equipment and materials to be stored will depend upon the finishes provided, the number and deployment of domestic services staff, and the frequency of cleaning.

## Catering facilities

**2.48** Patients should have the opportunity to receive light refreshments, such as sandwiches or toast, and beverages, for consumption during the recovery period. Project teams should decide whether the service provided to patients should be extended to escorts.

**2.49** This volume assumes that staff will attend the hospital staff dining room for main meals, although facilities are required in the endoscopy unit where staff can relax, and prepare and consume snacks and beverages.

## 3.0 General functional and design requirements

### Introduction

**3.1** This chapter provides planning and design guidance for an endoscopy unit related to the service objectives outlined in Chapter 2. Additional guidance which is common to all health buildings is discussed in Chapter 5.

### General design considerations

**3.2** An endoscopy unit should be planned and designed to provide patients and their escorts with high-quality facilities that will be easy for staff to manage and operate.

**3.3** The design should help to assure patients that they are receiving a first-class service. To this end, particular attention should be paid to the visual aspects of the unit as well as functional and environmental needs.

**3.4** Figure 2 illustrates key planning principles which include simple, direct flowlines, and compact routes and spaces, that:

- a. progress patients and supplies forward without unnecessary looping back;
- b. ensure that patients who have not been treated do not meet patients who have been treated (except perhaps at the point of entry/exit);
- c. eliminate cross-over circulation points;
- d. reduce double-handling of patients and supplies;
- e. reduce staff travel.

**3.5** Endoscopy units planned and designed in accordance with these principles will run effectively and efficiently. Managers of endoscopy units must ensure that patients are not allowed to feel that they are “on a conveyor belt” or are being treated as part of a production-line process.

### Signposting

**3.6** A large illuminated external sign is required by the main entrance. There should be minimal need for internal signs in an endoscopy unit. A plethora of signs is a strong indication that the design and workflow concepts are wrong. Traffic flows for patients in an endoscopy unit should be straightforward and self-managing.

### Intradepartmental relationships

**3.7** Patient-related activities in an endoscopy unit fall into four or five main groups which occur in the following sequence:

- a. reception and waiting;
- b. patient assessment (project option);
- c. preparation before procedure;
- d. procedure;
- e. recovery and discharge.

This volume identifies the spaces which need to be provided for these groups of activities.

**3.8** The patient management system will significantly influence the design and overall area of the unit, including the number of:

- chairs in the main waiting area;
- patient preparation rooms;
- trolley positions and chairs in the recovery areas.

Project teams will need information in connection with the management of patients, including the planned throughput, the appointments system and the policy for escorts.

**3.9** The number of chairs in the main waiting area in particular is affected by the appointments system. It is recommended that patients arrive at intervals during the course of a session and not together at the beginning of a session. This may be termed “phased admission”: it has the advantages both of reducing the waiting times for patients before procedures, and of reducing the size of the main waiting area.

**3.10** The assumptions used to determine the size and/or number of the spaces referred to in paragraph 3.8 are identified in Appendix 5. Figure 5, included with the Annex to Appendix 5, illustrates by means of a bar chart the movement of patients and escorts through an endoscopy unit during a half-day session. With the accompanying text, project teams will find the figure helpful as a basis for carrying out their own assessment of the effect of local factors on the number and/or areas of spaces required

**3.11** The design of the unit should facilitate uninterrupted patient movement both between and within the groups of spaces.

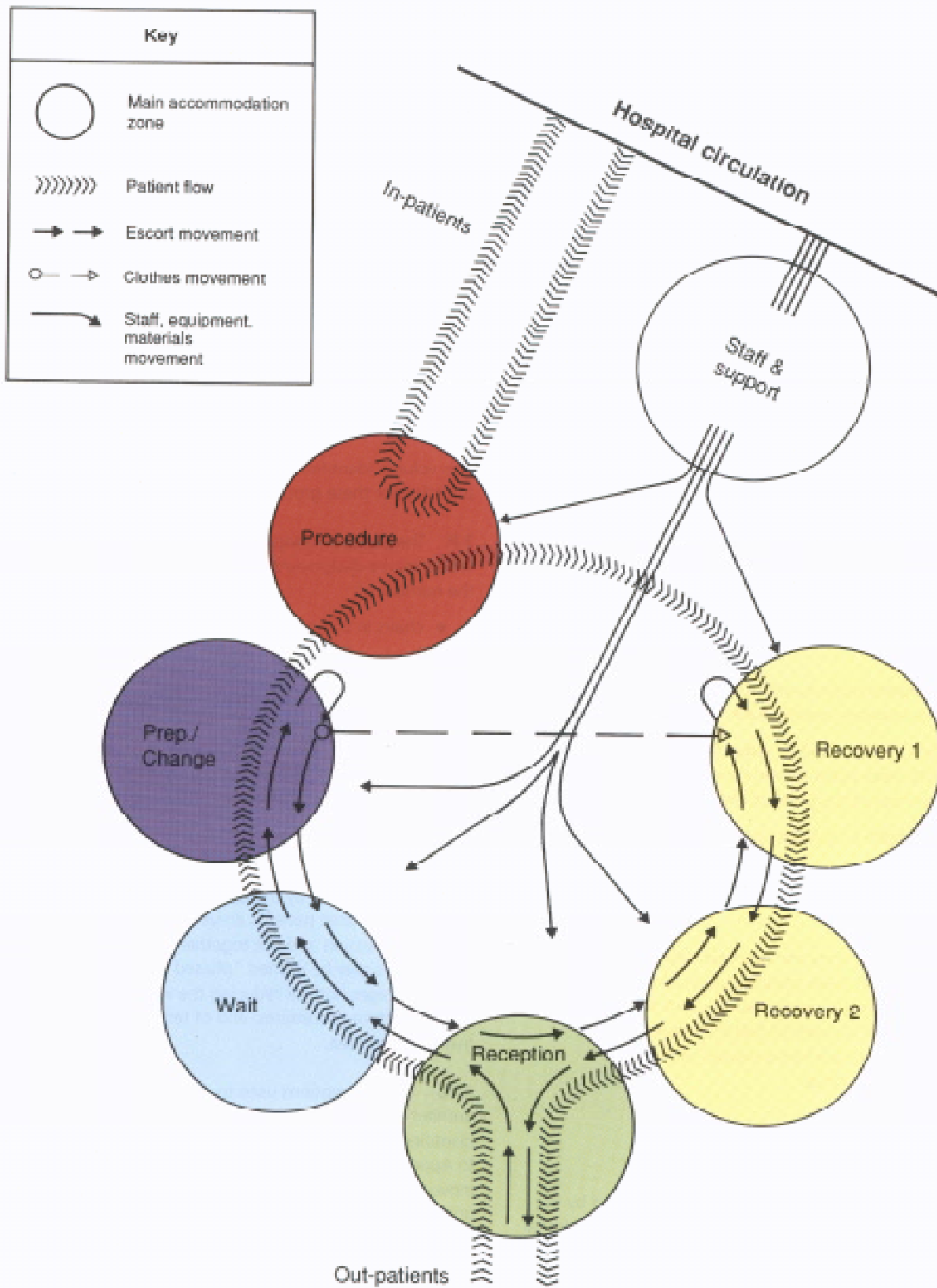


Figure 2 Planning principles of the patient cycle

**3.12** Account should be taken of:

- a. in-patients who arrive from other parts of the hospital. It is assumed that they will be prepared for endoscopy in an in-patient ward, attend the endoscopy room only in the endoscopy unit, and be transferred back to the in-patient ward following endoscopy;
- b. patients admitted to the endoscopy unit who need to be transferred to an in-patient ward for recovery which, it is assumed, will take place immediately following endoscopy.

**3.13** Patients may move to and from the endoscopy unit on foot, in a wheelchair, or on a trolley, and may or may not be escorted by a nurse (as well as a porter) dependent on their general condition and whether or not they have been sedated.

**3.14** Consideration should be given to the factors set out in paragraphs 3.12 and 3.13 when determining the location of the endoscopy rooms in relation to other spaces in the unit and in relation to other parts of the hospital. A link to the main hospital circulation route should be provided to facilitate the transfer of patients between the endoscopy unit and other parts of the hospital.

**3.15** Ease of movement around the unit will also be necessary for staff and for handling materials. Principal flowlines should be planned to minimise clashes between the movement of patients and the movement of materials. A secondary entrance for staff and materials-handling purposes will facilitate this and may be combined with the link to the main hospital circulation route referred to in paragraph 3.14.

**3.16** It is essential to preserve the privacy and dignity of patients, particularly where men and women occupy adjacent areas or share certain accommodation and circulation spaces. Appropriate spaces should provide visual and auditory privacy.

## Environment and design

**3.17** Designers should create an environment in the endoscopy unit that is more an extension of daily life than a hospital visit. This will help patients feel at ease, be conducive to efficient working, and contribute to staff morale.

**3.18** Abundant indoor planting and external landscaping are of special value in this field. Imaginative use of carpets, colour and lighting will help to produce a warm and friendly atmosphere in an endoscopy unit.

**3.19** The design process should include the choice of well-designed furniture and fittings and co-ordination of carpets and colour.

### Art in hospitals

**3.20** Works of art and craft can make a significant contribution towards the required standard of interior of an endoscopy unit: this need not be limited to the conventional hanging of pictures on a wall. Every opportunity should be taken to include works by artists and craftspeople throughout the unit. These may include paintings, murals, prints, photographs, sculptures, decorative tiles, ceramics, textile hangings and furniture.

**3.21** Often it is works of art and craft which lend special identity to reception or recovery spaces, and which help give a sense of locality.

**3.22** Advice should be sought from experts on:

- a. obtaining grants. In some cases, moneys for art within a capital scheme can be matched by grants from charities or Regional Arts Boards;
- b. ensuring quality in all art and craft works;
- c. appropriately locating art and craft works;
- d. selecting artists and craftspeople.

### Courtyards

**3.23** Courtyards enable more rooms to receive natural daylight and ventilation, and provide an outlook which can compensate for the lack of longer view. Suitable layout and planting can help to preserve privacy in surrounding rooms. Ground-cover planting is preferred to grass as it is often more successful and is easier to maintain.

**3.24** Access for maintenance should be from a corridor so that patients and staff are not disturbed.

**3.25** Reference should be made to HBN 45 - 'External works for health buildings' (1992) for more detailed guidance on this subject.

### Natural and artificial lighting

**3.26** Sunlight enhances colour and shape and helps to make a room bright and cheerful. The harmful effects of solar glare can be dealt with by architectural detailing of window shape and depth of reveals as well as by installing external and internal blinds and curtains.

**3.27** Wherever possible, spaces to be occupied by patients, escorts or staff should have natural daylight with an outside view.

**3.28** Artificial lighting, as well as providing levels of illumination to suit activities, can make an important contribution to interior design. Designers should develop a lighting scheme that will help to promote a high-quality image of the day endoscopy service and a non-clinical, soft environment. Use of indirect lighting in public and patient areas will assist.

**3.29** Artificial lighting provided in patient assessment, treatment and recovery areas should enable changes to a patient's skin tone and colour to be clearly defined and easily identified (see paragraph 6.75).

**3.30** In recovery areas, luminaires should not be mounted on ceilings immediately above positions where conscious patients lie on a trolley: alternative indirect luminaires should be selected.

**3.31** Task lighting should be of the required intensity with low-contrast glare-free background illumination.

## Location

**3.32** The main locational requirement of an endoscopy unit within an acute general hospital is the need for easy access for patients, escorts, staff and materials. Patients and escorts should be able to move directly into and out of the unit from the outside without entering other parts of the hospital complex and needing to use lifts and corridors.

**3.33** The endoscopy unit should be sited at ground level on a single floor. It should have its own external main entrance off the hospital road system for use by patients and escorts. The endoscopy unit should have a clear, unique identity.

## Planning considerations

### Patients and escorts

**3.34** The majority of patients and escorts will make their own arrangements for transport to and from the endoscopy unit, many travelling by private car. Patients and escorts should be able to locate the endoscopy unit easily from the main entrance to the hospital site.

**3.35** The guidance in this volume includes facilities which enable escorts to remain with adult patients for all activities except "procedure" (see paragraph 3.7). During the period of "procedure", and also during other periods of a patient's attendance, escorts of adult patients may wish to leave the unit. Provision of an escort location system (similar to a "bleep"/staff location system for members of staff) will facilitate the recall of escorts as and when appropriate.

### Car parking

**3.36** Car parking facilities should be provided for patients and escorts attending the endoscopy unit. It is helpful if patients can be set down prior to endoscopy and collected following endoscopy (particularly if they have been sedated), at a point close to the main entrance to the endoscopy unit. This objective can be achieved if the car parking facilities are located:

- a. close to the endoscopy unit, and an adequate number of spaces can be reserved for use by patients/escorts; or
- b. remote from the endoscopy unit, but adequate space is provided near the main entrance where cars can be parked temporarily while escorts attend to patients.

### Disabled people

**3.37** It is essential to ensure that suitable access and facilities are provided for disabled people who have problems of mobility or orientation. This includes, besides people who are wheelchair-bound, those who for any reason have difficulty in walking and those with a sensory handicap such as a visual or hearing impairment. Authorities are reminded of the need to comply with the provisions of:

- a. The Chronically Sick and Disabled Persons Act 1970;
- b. The Chronically Sick and Disabled Persons (Amendment) Act 1976;
- c. The Disabled Persons Act 1981;
- d. The Disabled Persons (Services, Consultation and Representation) Act 1986;
- e. The Building (Disabled People) Regulations 1991 (1992 Edition).

**3.38** Attention is also drawn to BS5810:1979 - 'Access for the Disabled to Buildings' (under review). One of the effects of the 1981 Act is to apply this British Standard to premises covered by the 1970 Act, which includes those open to the public. Practical guidance for complying with the Building (Disabled People) Regulations is issued by the Department of the Environment under Approved Document M: 'Access for the Disabled'.

**3.39** Project teams are encouraged to refer to HBN 40 - 'Common Activity Spaces, Volume 4: Designing for disabled people'. This gives guidance and a set of ergonomic data sheets on access, space and equipment relating to disabled people in health buildings.

**3.40** It is recommended that project teams consult local representatives of disabled people with regard to the planning of spaces used by patients and escorts.

**3.41** If public telephones are provided, the telephone handset should be fitted with an inductive coupler to assist people using a hearing aid.

### Provision of WCs

**3.42** WCs are required in an endoscopy unit:

- a. for men and women who are disabled as well as those who are ambulant;
- b. for patients, escorts, staff and visitors, any of whom could be disabled;
- c. for patients and escorts, close to the main waiting area, the patient changing rooms and the recovery areas.

In responding to these diverse needs, care should be taken to avoid the provision of an excessive number of WCs.

**3.43** Single-cubicle WCs, appropriate for use by men or women, are implied. Upgrading one of these WCs to disabled standard in each of the locations noted in paragraph 3.42(c) would help disabled people to feel included, while making an economic provision. This WC could also be used by others. Additionally, the inclusion of a bidet in the WC associated with the recovery areas might also serve to reduce proliferation of facilities.

**3.44** Individual projects will need to balance the amount of sharing of facilities to meet functional requirements while still ensuring the maintenance of privacy and dignity required in the endoscopy unit.

### Interdepartmental relationships

**3.45** Patients may be transferred between the endoscopy unit and other parts of the hospital before and after endoscopic procedures. Ease of access is important: also, ideally, the distance should be short.

**3.46** Children should not be moved around a hospital unnecessarily. If, for endoscopy, children attend both the children's department and the endoscopy unit (see Option 4, paragraph 2.20), the two departments should be sited close to each other in order to minimise the travelling distance.

**3.47** Patients may make their own appointments for endoscopy at the endoscopy unit immediately following an out-patient attendance. It will help patients if the endoscopy unit is located close to the out-patients department.

**3.48** It is assumed that endoscopy patients will be assessed in the out-patients department. If not, it may be

necessary to provide a second consulting/examination room in the endoscopy unit.

**3.49** An endoscopy unit will need to draw upon other hospital departments for support services. There are no critical connections that demand that the endoscopy unit is located immediately adjacent to any of them, but short logistical links and ease of access will aid efficiency.

**3.50** Provision of a secondary entrance from the main hospital circulation route will facilitate ease of access to and from other parts of the hospital for patients, staff and materials.

### Comprehensive accommodation for day care

**3.51** Consideration should be given to accommodating other related day care services, such as day surgery and medical investigations and treatment, with endoscopy. (See Appendix 2, HBN 52 - 'Accommodation for day care', Volume 1 - 'Day surgery unit', 1993, HMSO, and Volume 3 - 'Medical investigations and treatment' (in preparation).)

### Phasing

**3.52** Project teams should assess the size of endoscopy unit required in accordance with guidance included in other parts of this volume and construct the unit in one phase wherever possible.

**3.53** Phased development and expansion, while not impossible, may present exceptional operational problems. If it is necessary to increase the size of an endoscopy unit, consideration should be given to building an adjoining unit to complement the original, or a totally new unit to embrace all new requirements.

### Internal environmental engineering considerations

#### Internal rooms

**3.54** Internal rooms may contribute to economy in planning. If, however, additional artificial lighting and ventilation are required, both capital and running costs are likely to be increased.

**3.55** Use of internal rooms should be limited to activities which:

- a. demand a controlled environment; or
- b. are carried out intermittently by different individuals.

**3.56** Rooms that are likely to be occupied for any length of time by a patient, an escort or a member of staff should have natural light and natural ventilation.

#### Ventilation - general

**3.57** Natural ventilation is preferred unless there are internal spaces or clinical reasons that call for mechanical ventilation, comfort-cooling systems or air conditioning.

**3.58** Mechanical ventilation and comfort-cooling systems are expensive in terms of capital and running costs: planning solutions should be sought which take maximum advantage of natural ventilation. Mechanical ventilation can be minimised by ensuring that, wherever practicable, core areas are reserved for rooms whose function requires mechanical ventilation irrespective of whether their location is internal or peripheral.

#### Noise and sound attenuation

**3.59** Any unwanted sound is a noise and may disturb patients and staff. Noise should be controlled at source. Unnecessary sound insulation may be avoided by careful planning.

**3.60** Telephone systems at staff bases need special consideration in respect of both noise and auditory privacy. The telephone installation should permit calls to be transferred from staff bases to a more private location.

#### Finishes

**3.61** The quality of finishes in all areas should be of a high standard: the cost allowance makes due recognition of this need. Guidance on the selection of finishes is provided in Health Technical Memoranda (HTMs) (see Bibliography).

**3.62** Finishes should be robust enough to withstand accidental impact and additional protection should be provided at likely points of contact. Trolleys and items of mobile equipment which may cause damage should be appropriately buffered.

#### Colour

**3.63** Colours of surfaces in patient assessment, treatment and recovery areas should not distort the colour rendering of light sources. It must be possible to clearly define and easily identify changes to patients' skin tone and colour (see also paragraph 3.29 and paragraph 6.75).

#### Floors

**3.64** Floor coverings and skirtings should contribute to the provision of a non-clinical environment and, at the same time, be hardwearing. They must not present a hazard to disabled people nor restrict the movement of wheeled equipment. Floors should not be, nor appear to be, slippery, and the patterning should not induce disorientation. Changes of floor level should be avoided wherever possible. Surface drag, static electricity, flammability, infection hazards and impermeability to fluids have to be considered. HTM 61 should be consulted for advice on user requirements and performance selection.

**3.65** Finishes should be appropriate for the activities to be carried out, restricted in variety for ease of cleaning, and compatible with agreed cleaning routines.

#### Doors and frames

**3.66** Doors and frames are particularly liable to damage from mobile equipment, and materials which will withstand this should be used. All double-swing doors should incorporate clear glass vision panels, but privacy, safety or other considerations may require that the panels should be capable of being obscured. Where necessary, doors should be capable of being fastened in the open position. Magnetic door retainers should not restrict the movement of traffic.

#### Windows

**3.67** In addition to the various statutory requirements, the following aspects require consideration: illumination and ventilation; insulation against noise; user comfort; energy conservation; the prevention of glare; the provision of a visual link with the outside world.

**3.68** Design should ensure that it is possible for cleaners to have easy access to the inside and outside of windows. Guidance on types of windows and on the safety aspects is available in HTM 55 - 'Windows'.

**3.69** Daylight requirements for an endoscopy room are discussed in paragraph 4.44.

**3.70** Windows provided in the recovery areas will contribute to the well-being of both patients and staff. Windows should, if possible, have a pleasant outlook.

## Smoking

**3.71** NHSME circular HSG(92)41 dated October 1992 - 'Towards smoke-free NHS premises' promulgated Government policy set out in the 'Health of the Nation' White Paper and required NHS authorities and provider units to implement policies so that the NHS became virtually smoke-free by 31 May 1993. The circular advises that a limited number of separate smoking rooms should be provided, where necessary, for staff who cannot give up smoking and for patients who cannot stop smoking.

**3.72** No provision has been made in this HBN for staff or patients who wish to smoke.

## 4.0 Specific functional and design requirements

### Introduction

4. This chapter describes in greater detail the individual spaces in an endoscopy unit. Details of activities, equipment, environmental conditions and finishes are given in the activity data sheets listed in Chapter 8.

### Relationships of spaces

4.2 Figure 3 identifies the relationships of spaces and groups of spaces described in this chapter.

### Description of accommodation

#### Main entrance canopy

4.3 Patients and escorts should be able to find the endoscopy unit easily on arrival at the hospital. The entrance canopy may be designed to be sufficiently conspicuous to attract attention.

4.4 Ambulances may deliver or collect patients. The entrance canopy should therefore not only be large enough to afford adequate weather protection for patients alighting from and entering vehicles, but also be high enough to clear lights and aerials on ambulances. The space should be well lit.

#### Main entrance draught lobby

4.5 Access to and from the main entrance to the unit should be through a draught lobby with automatic doors. The lobby should be large enough to allow people to stand aside to permit the passage of a patient accompanied by an escort and also to allow pushchairs and wheelchairs to pass. The lobby should have a floor covering which will trap dirt carried by footwear and on wheels, and which can be easily cleaned.

#### Main entrance foyer

4.6 The foyer provides circulation space between the draught lobby and the main patient routes leading to the reception counter and the main waiting area, and from the recovery areas.

4.7 The WC/wash for escorts and visitors (paragraph 4.85), the baby feeding and nappy changing room (if provided/paragraph 4.86) and a public telephone (paragraph 4.87) should be located with entry direct from

the foyer and be easily accessible to patients and escorts entering and leaving the unit.

4.8 The foyer should be large enough to allow people to move about with ease, including those who are disabled, in wheelchairs, and using walking aids.

#### Reception counter

4.9 The reception counter should provide a low, open, friendly facility that does not give any sense of a barrier or generate a feeling for the patient of "them and us". The overall impression must be of high-quality design that combines efficiency with elegance. Patients, escorts and staff must be able to talk and exchange information with ease.

4.10 The main function of receptionists will be receiving and registering patients and their escorts upon arrival. The receptionists will also deal with enquiries made in person, remind escorts of arrangements for collecting patients, and provide a link with nursing staff. Information on the movement of patients and their health records through the unit may be provided by means of computer links or telephone. Space will be required at the reception counter for VDTs, a working supply of stationery and office accessories, and parking a health records trolley. Care should be taken with the initiation and receipt of telephone calls concerning patients, as telephone calls are a distraction and may be inappropriate to conduct in front of patients.

4.11 The reception counter should be located and designed so that:

- a. there is easy access from the foyer;
- b. it is obvious to patients and escorts when entering the main waiting area;
- c. seated receptionists can see all patients and escorts entering the unit and in the main waiting and play areas;
- d. there is direct access to the general office;
- e. there are two heights to the counter top:
  - (i) for wheelchair and child patients;
  - (ii) standing height for occasional writing.

4.12 The reception counter will be a focal point and should be the subject of special design consideration. Project teams may wish to use the opportunity to

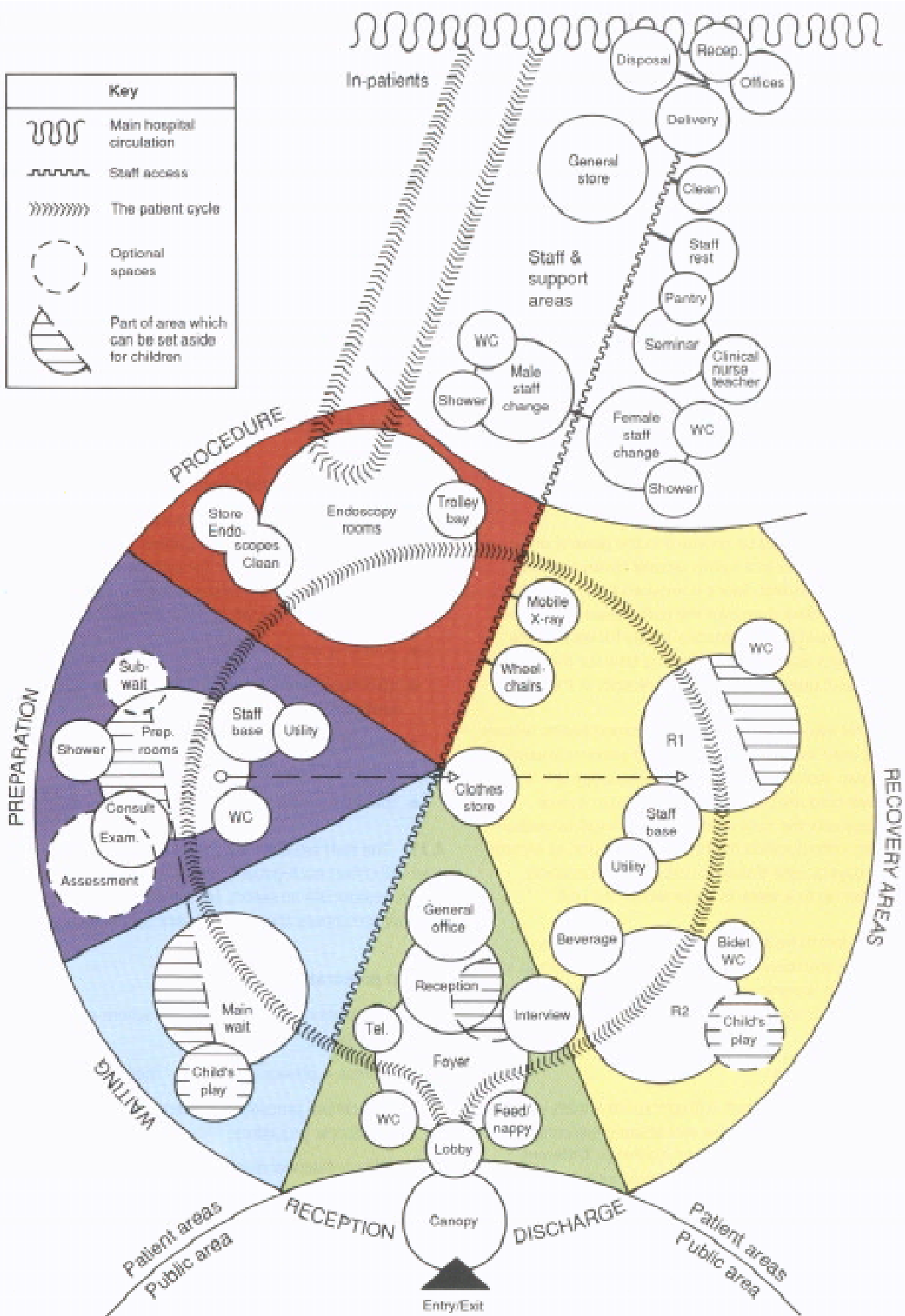


Figure 3 Functional relationships diagram

commission the reception counter as a crafted piece of furniture.

#### General off ice

**4.13** An office is required immediately adjacent to, and opening off, the reception counter to provide the administration and communication centre of the unit. Provision of Type 5 and/or Type 6 office workstations (see HBN 18 - 'Office accommodation in health buildings') is appropriate. Duties of administrative and clerical staff may include management of the patient appointment system, issue of discharge letters, liaison with other parts of the healthcare system, preparation of reports and analysis of statistics. VDTs are required for word-processing and other computer-related activities. Consideration should be given to routing all telephone calls to and from the unit through the general office. A fax machine will be required for transmitting messages to general practitioners and other personnel. A working supply of stationery, and leaflets to hand to patients and escorts and for display, can be stored in cupboards in the general office.

**4.14** A store should be provided in the general office where trolleys used in a health records trolley exchange service can be parked. Space is required for three trolleys, that is, for holding overnight the trolley used during the current day, and for parking one trolley for each of the following two days (thereby allowing time for the final checking and preparation of health records in the unit).

**4.15** This volume assumes that a separate health records trolley is used for the health records of patients attending on one day. Accordingly, in a small endoscopy unit the trolley will hold relatively few records and in a large endoscopy unit the trolley will be full. In small to medium-size units, consideration might be given to storing records for two days on one trolley, thereby accommodating records for up to a week or more within the unit.

**4.16** Access to health records should be limited to appropriate members of staff. It should be possible to lock the store; this is particularly important when the general office is not occupied.

#### Main waiting area

**4.17** Patients and escorts will appreciate a main waiting area which has a comfortable and relaxing environment with domestic-type finishes and furnishings. Different types of seating are required and should include those suitable for elderly people and children. The layout should be informal. There should be space for a patient in a wheelchair and for people using walking aids. Project teams may wish to consider the provision of low-level background music and/or a TV/video system. These may help patients relax, alleviate the boredom of essential waiting, particularly for children, and mask confidential

discussions. A supply of current reading material should be available in a well-designed holder.

**4.18** The main waiting area should have direct access from the foyer, be overseen by the reception counter, and have easy access to patient preparation rooms. The main waiting area should be sized on the basis of an effective appointments system. Appendix 5 identifies the assumptions made in assessing the area included in the Schedules of Accommodation (Chapter 7).

#### Play area (main waiting)

**4.19** A play area should be provided where children can play or read in safety. The play area should:

- a. be "en-suite" with the main waiting area;
- b. if possible, have access to an external play area (see HBN 45 - 'External works for health buildings').

#### Patient preparation staff base

**4.20** It is important for the staff base to oversee the patient changing rooms and the patient sub-wait area. The staff base acts as a focal point for staff who will be managing the preparation of patients prior to their procedure. Facilities needed at the staff base include:

- a writing surface;
- communications equipment, including a VDT and key board;
- storage space for a working supply of clean and sterile supplies and for stationery;
- space for holding health records of patients.

**4.21** The staff working within the patient preparation area will collect each patient, with their health record and where appropriate an escort, from the main waiting area and will accompany them to a patient preparation room

#### Patient preparation rooms

**4.22** Preparation rooms are required where a patient can, as necessary:

- a. undress in privacy and put on "theatre" clothing;
- b. have certain procedures undertaken prior to the endoscopic procedure;
- c. hold confidential discussions, for example, taking informed consent. Auditory privacy should be provided as far as practicable;
- d. relax and wait until it is time to be escorted to an endoscopy room;
- e. use a patient/nurse call system.

**4.23** There are various ways of handling patients' clothing and personal effects. Project teams will need to work out their own method. This volume assumes that, with the patient's permission, clothing and personal effects will be transferred to and retained in a secure clothing store for safe-keeping until required.

**4.24** In the interests of maintaining a non-clinical environment as far as possible, each patient preparation room might include a domestic-style vanity unit, with a hand-rinse basin, mirror, and cupboard for holding "theatre" clothing. Patient preparation rooms should not be cramped. Each requires easy chairs for the patient and for an escort. One room should be capable of accommodating a person in a wheelchair. Nursing staff may carry out simple clinical procedures, such as taking a patient's blood pressure. The use of a mobile sphygmomanometer may be preferred to a wall-mounted version. Project teams may wish to consider the provision of low-level background music.

**4.25** Patient preparation rooms should be adjacent to the main waiting area, with patient toilet facilities and the patient preparation staff base in close proximity. Patient flow will be assisted if there is easy access from the patient preparation rooms to the endoscopy rooms. The number of patient preparation rooms required should be determined locally. The key factor will be the patient throughput of the endoscopy rooms. Generally, one patient preparation room for each endoscopy room will suffice when the time required for an endoscopic procedure is longer than that for patient change. An additional room should be provided to cater for the endoscopy session with a fast throughput. Pressure on the number of patient preparation rooms resulting from fast throughput of patients will be further relieved by the inclusion of a sub-wait area (paragraph 4.27). Appendix 5 identifies the assumptions made in assessing the number of preparation rooms included in the Schedules of Accommodation (Chapter 7).

#### **Colonoscopy preparation room**

**4.26** This volume assumes that patients will arrive at the endoscopy unit already prepared for procedures such as colonoscopies and, therefore, that a colonoscopy preparation room is unnecessary.

#### **Sub-wait area**

**4.27** It is recognised there are a number of options relating to patient movement and places where patients, once changed for endoscopy, may wait. The guidance in this volume advocates that waiting should be in comfort and mostly take place in a patient preparation room, thereby minimising the number of moves a patient is required to make before reaching an endoscopy room. Some patients, however, prefer to wait with other

patients. An open sub-wait area where patients can wait together after leaving their preparation room and until it is time to be taken to an endoscopy room may be provided. It is a project option.

#### **Consulting/examination room**

**4.28** A patient preparation room may be inappropriate for full consultation and examination purposes. A multi-purpose standard combined consulting and examination room is provided for such occasions. This room should be located with convenient access from the patient preparation rooms.

#### **WC/wash: patient**

**4.29** WC facilities for male and female patients should be provided close to the patient preparation rooms.

#### **WC/wash: disabled people**

**4.30** A WC with a hand-wash basin, easily accessible from the main waiting area, should be provided for use by disabled people who attend, or work in, the endoscopy unit.

#### **Shower: patient**

**4.31** In localities where residential accommodation may have inadequate facilities, project teams may provide a shower for patient use. This should adjoin the patient WC facilities. It is a project option.

#### **Secondary entrance**

**4.32** A secondary entrance to the endoscopy unit, preferably off the main hospital circulation route, will provide a convenient link to the hospital. Dedicating the main entrance for use by adult patients, escorts and visitors, the secondary entrance will facilitate:

- a. ease of access for staff;
- b. delivery of supplies and disposal of waste, etc;
- c. access and admission of patients to and from in-patient wards;
- d. access and return of child patients to and from the day care ward of the children's department, where necessary (see paragraph 2.20).

**4.33** Access at a secondary entrance will need to be controlled. Unless the entrance is manned or overseen by a member of staff based in an adjacent space, a door security intercommunication system will be required in order to provide an appropriate level of security. The system will prevent unauthorised entry while permitting free movement of staff. A terminal in an appropriate space

in the unit will need to be connected to a terminal at the secondary entrance.

#### Children's reception

**4.34** The children's reception is a project option. It should be located in the secondary entrance by project teams planning an endoscopy unit where use by children is limited (see Option 4, paragraph 2.20). Children coming from the day care ward of the children's department can then enter the endoscopy unit, be received in the children's reception and follow a separate flowline from that used by adult patients. Children do not, therefore, have to enter the endoscopy unit via the main entrance, the foyer, the reception counter and the main waiting area.

**4.35** As children will have been prepared for endoscopy in the children's day care ward, the children's reception should have convenient access to the endoscopy rooms. After endoscopy, children may be returned to the children's day care ward for recovery and discharge via the children's reception and the secondary entrance. In this option, children will not be expected to use the patient preparation rooms or the recovery areas used by adult patients.

#### Endoscopy room

**4.36** Patients may move to the endoscopy room from the main waiting area, a patient changing room, a sub-wait area or an in-patient ward, and may arrive on foot, in a wheelchair or on a trolley. Patients who arrive on foot or in a wheelchair will mount a trolley in the endoscopy room.

**4.37** An endoscopy room should be capable of accommodating a range of diagnostic and therapeutic endoscopic procedures (see Appendix 1), and be dedicated for single-purpose use only if fully utilised for a particular type of procedure.

**4.38** Easy access is required for the movement of trolleys into and out of the endoscopy room. During an endoscopic procedure, the trolley with the patient is located at the centre of the room, with the doctor standing at one side of the trolley and a nurse standing at one end of the trolley. The endoscope viewing monitor should be at the opposite side of the trolley to the doctor in order to provide uninterrupted views of the procedure. The room can be divided diagonally into two main areas, the doctor area and the nurse area, in accordance with the positions and activities of the doctor and the nurse, and the facilities used by them. Further information on this matter, including ergonomic drawings for an endoscopy room, is included in Appendix 6.

**4.39** The doctor area should include clinical hand-wash facilities and a small office workstation where a doctor may sit to dictate or write notes between cases and/or use a visual display terminal (VDT) for word-processing and other computer-related activities.

**4.40** The nurse area should include a work-surface with inset sink, and units for the storage of endoscope accessories, small quantities of clean and sterile supplies and drugs, including the temporary storage of Controlled Drugs. There should be direct access from the nurse area to the endoscope cleaning room and store to facilitate the supply and reprocessing of endoscopes.

**4.41** Items of endoscopy equipment, including the light source, suction equipment, endoscope viewing monitor, video cassette recorder and printer, may stand on trolleys or wall-mounted shelves or in wall-mounted units. Other items of equipment should include a twin X-ray viewer and a pulse oximeter. Consideration should be given to providing appropriate services on ceiling-mounted pendants and to locating the CCTV camera so that the view of appropriate activities is not obstructed.

**4.42** Space is allowed to manoeuvre and position a mobile image intensifier. If an image intensifier is to be used, the design and construction of the endoscopy room must be approved by the local radiation protection adviser. Lead aprons worn by staff remaining with the patient during an X-ray procedure are held on racks in the mobile X-ray equipment bay.

**4.43** The endoscopy room should be provided with piped oxygen and medical vacuum outlets and a staff emergency call system. A clinical hand-wash basin is also required.

**4.44** Natural daylight is appreciated by patients and staff and should be supplied directly by windows. If this is not possible, consideration should be given to the provision of "borrowed" light, for example by means of windows across corridors. Patient privacy is of paramount importance and, in some situations, it may be necessary to install window blinds. Vertical-vane blinds can be adjusted to maintain privacy and still allow a good supply of natural light.

**4.45** Project teams may wish to consider the provision of low-level background music.

**4.46** After the endoscopic procedure, patients may move to the recovery stage 1 area, the recovery stage 2 area or an in-patient ward; they may do so on foot, in a wheelchair or on a trolley. Patients may leave the unit on foot direct from the endoscopy room; access should be via the recovery areas.

### Endoscope cleaning room and store

**4.47** An endoscope cleaning room and store is required with a “dirty” area where used equipment can be reprocessed and a separate “clean” area where reprocessed equipment can be stored. See also Appendix 6.

**4.48** Endoscopes and endoscope accessories which cannot be autoclaved should be cleaned and disinfected in the “dirty” area. Also, if local policy elects, endoscope accessories may be sterilised and suction bottles may be automatically emptied, washed and disinfected; alternatively, these items may be returned to the sterile services department (SSD) for reprocessing.

**4.49** Dependent on local usage, the “dirty” area should be equipped with an automated endoscope washer/disinfector, an automated suction bottle washer/disinfector, a sink unit with two sinks and a double drainer, a work-surface and low-level cupboards for the storage of a working supply of consumables (such as liquid disinfectant). A source of suction will be required if tubes and cannulae are irrigated; a worktop autoclave if endoscope accessories are sterilized; and an ultrasonic cleaner for processing flexible endoscope accessories.

**4.50** Glutaraldehyde is a hazardous substance. It is recognised to be toxic-irritant and allergenic. Care should be taken to avoid inhalation and skin and eye contact. More detailed guidance on its use and on safety precautions is included in paragraphs 6.37 to 6.43.

**4.51** Storage is required for appropriate personal protective equipment such as nitrile gloves, goggles, impermeable aprons and respiratory protection suitable for use when mixing and dispensing solutions of glutaraldehyde.

**4.52** The “clean” area of the endoscope cleaning room and store should include units for the storage of:

- a. flexible endoscopes;
- b. flexible accessories for endoscopes;
- c. other accessories for endoscopes.

**4.53** Clinical hand-wash facilities, and pedal-operated sack-stands for the disposal of waste, are also required.

**4.54** The endoscope cleaning room and store should have direct access from the nurse area of the two endoscopy rooms it is assumed to serve. Care should be taken to ensure that aural and visual privacy for patients in the endoscopy rooms is maintained.

### Mobile X-ray equipment bay

**4.55** A space to accommodate a mobile image intensifier with TV monitor and video recorder on a trolley, and an X-ray protective apron rack, should be provided with easy access to the endoscopy rooms. Alternatively, project teams may consider providing additional space for the storage of X-ray equipment in the endoscopy room most likely to be used for endoscopic procedures which require X-ray facilities.

### Recovery areas

**4.56** Various arrangements for patient recovery are currently in operation. In this volume, the guidance provides for recovery to take place in two stages.

**4.57** The recovery stage 1 area includes reclining chairs for patient recovery. Each reclining chair is contained in an individual curtained space; the curtains may be partially or fully closed, or fully open. Patients may move from an endoscopy room to the recovery stage 1 area on a trolley, in a wheelchair or on foot.

**4.58** Each curtained space should be provided with service outlets, including oxygen and medical vacuum, a patient/staff call system and a chair suitable for use by an escort. The patient may dress in privacy, when fit to do so, before moving to the recovery stage 2 area. The recovery stage 1 area should be as non-clinical in appearance as recovery functions permit. There should be easy access from the endoscopy rooms.

**4.59** The recovery stage 2 area is a type of open lounge, furnished with informally-arranged seating and occasional tables. Patients complete their recovery here and are prepared for discharge. Light refreshments and beverages should be available. An area where children can play safely, similar to that provided in the main waiting area, may be provided en-suite with the recovery stage 2 area. Toilet facilities will also be required. Project teams may wish to consider the provision of low-level background music and/or a TV/video system in the recovery stage 2 area. The recovery stage 2 area should be located close to the main entrance by which patients will leave after discharge.

**4.60** Appendix 5 identifies the assumptions made in assessing the areas of the recovery areas included in the Schedules of Accommodation (Chapter 7).

### Recovery staff base

**4.61** A staff base is required, as a focal point, within the recovery areas. It should be located in a dominant position capable of overseeing both the stage 1 and stage 2 areas. Patients and escorts should be able to easily identify the staff base. Space is required for equipment associated with computer-related activities.

**4.62** Administrative duties associated with recovery and discharge, and communications with other spaces within the endoscopy unit, will take place at the staff base. Shelving should be provided to accommodate a working stock of sterile supply and disposable items required for procedures undertaken during recovery. Clinical hand-washing facilities are required.

**4.63** Each patient will receive discharge instructions and may be issued with prescribed drugs or medicines. Storage facilities for medicinal products should be provided at the staff base. On discharge, the patient's health records will be placed on a parked health records trolley prior to being returned to the unit's general office.

#### **Resuscitation trolley bay**

**4.64** A resuscitation trolley bay, with space for parking a resuscitation trolley (with defibrillator), a mobile suction unit and a cylinder of oxygen on a trolley, should be located adjacent to the recovery staff base and with easy access to all spaces used by patients.

#### **Beverage bay**

**4.65** A beverage bay where staff and/or escorts can prepare light refreshments and beverages should be provided en-suite with the recovery areas. Facilities for storing crockery and cutlery and for washing-up, and a refrigerator, are required. Consideration may be given to installing a snack/beverage vending machine.

#### **WC/wash: patient**

**4.66** WC facilities for male and female patients should be provided in association with the recovery areas. A bidet should be included with one of the WCs.

#### **WC/wash: disabled people**

**4.67** A WC with a hand-wash basin, easily accessible from the recovery areas, should be provided for use by disabled people who attend, or work in, the endoscopy unit.

#### **Dirty utility**

**4.68** A small dirty utility room should be provided where appropriate items of equipment (including some trolleys) may be cleaned, for the disposal of liquid and solid waste, and for temporarily holding materials to be reprocessed and for disposal.

**4.69** The room should be fitted with a sluice sink, a sink-unit with drainer, a hand-wash basin, a worksurface, cupboards and shelves. Space should be available to park trolleys and for temporarily holding bags of soiled linen, etc. Pedal-operated sack-stands are also required.

#### **Staff change/locker room**

**4.70** The guidance in this volume assumes that:

- a. all staff will change within the unit;
- b. personal hospital and/or unit uniforms will be issued elsewhere in the hospital.

**4.71** Separate staff change/locker rooms are provided for men and women. In the staff change/locker rooms, staff change from outdoor clothing to a uniform and store outdoor clothing and other personal items.

**4.72** Personal full-length lockers for the secure storage of dry outer and middle garments, footwear and small items of personal belongings are required. Hanging rails, with security, for the storage of wet outer garments and lockers for large items of personal belongings should be provided. Used uniforms will be deposited in a soiled linen trolley.

**4.73** Project teams should consider providing electronic security locks on access doors to staff change/locker rooms.

#### **Staff sanitary facilities**

**4.74** Sanitary facilities, including WCs with hand-wash basins, and a shower, should be located adjacent to the staff change/locker room.

#### **Staff rest room**

**4.75** Rest room facilities are required where staff can relax and take beverages and snacks. Project teams may determine how the total space available should be allocated. One large common room may be preferred or, alternatively, the total space may be divided to provide two rooms.

**4.76** Rest rooms should have windows with a pleasant outlook, be comfortably furnished and include a telephone. Rest rooms should have direct access to the pantry.

#### **Pantry**

**4.77** Pantry facilities are required for the safe handling of food including the preparation of beverages and light snacks, for washing and storing crockery and cutlery, for storing a limited quantity of dry goods, and for the refrigerated storage of milk, etc. Equipment should include a stainless steel sink and drainer, an electric water boiler, a microwave cooker, a worktop with cupboards, an automatic dishwasher and a hand-wash basin.

### Seminar room

**4.78** The nature of the work in an endoscopy unit is such that staff cannot easily leave the unit when it is operational. A seminar room should therefore be provided within the unit for teaching, tutorials, meetings, case conferences and clinical instruction. The room may also be used as a base for a clinical nurse teacher. Furniture and equipment should include upright stacking chairs with writing arms, a wall-mounted whiteboard, a mobile X-ray viewer, a video/TV monitor, a wall-mounted display panel and facilities for storing valuable and fragile items. Closed-circuit television should link the seminar room with the endoscopy rooms (see paragraph 2.25).

### Unit director's office

**4.79** This office is the administrative base for the unit director. It should be sufficiently private for confidential discussions between staff, and for interviewing patients' escorts. The office should accommodate one Type 3 office workstation with VDT and keyboard, seating for up to three other persons, and storage for books and files.

### Nurse manager's office

**4.80** The nurse manager requires similar office facilities to those provided for the unit director.

### Medical staff office

**4.81** The medical staff office should include facilities for use by medical staff working in the unit for administrative work, confidential discussions and the dictation of case notes.

### Interview room

**4.82** It is expected that most confidential discussions with patients, including taking informed consent for treatment, will occur in the patient preparation rooms (see paragraph 4.22). However, an interview room may be provided where extended interviews and counselling can take place in greater privacy. It should be located convenient for use by patients as they enter and leave the endoscopy unit in order to facilitate easy access for pre- and post-procedure counselling. The walls of the interview room should be constructed so as to attenuate sound and provide an acceptable level of speech privacy. The room should be furnished with easy chairs and an occasional table. Provision of an interview room is a project option.

### Patients' clothing store

**4.83** This volume assumes that, with the patient's permission, clothing and personal effects removed during patient preparation will be transferred to and securely held in a clothing store until returned to the patient during recovery (see paragraph 4.23). The patients' clothing store

should be easily accessible from the patient preparation rooms and from the recovery areas.

### Unit cleaners' room

**4.84** Space and facilities must be sufficient for parking and manoeuvring cleaning machines and for the cleansing of cleaning equipment and the disposal of fluids and used cleaning materials. Hand-washing facilities are also required. Shelving and vertical storage should not encroach on the working space or restrict access to the cleaners' sink. Not requiring a close relationship with any particular area within the unit, the cleaners' room should be located away from the principal routes used by patients.

### WC/wash: escort and visitor

**4.85** Escorts and visitors to the unit should have access to toilet facilities separate from those reserved for patient use, possibly located off the main entrance foyer.

### Baby feeding and nappy changing room

**4.86** Provision of a baby feeding and nappy changing room, where a baby can be breast- or bottle-fed and have a nappy change in privacy, is a project option. If included, the room should have easy access from the main waiting and recovery areas, possibly located off the main entrance foyer. Seating, and facilities to dispose of soiled nappies and other waste and for hand-washing, are required.

### Public telephones

**4.87** Patients and escorts may need the use of a telephone. Public telephones should be located with easy access from the main waiting and recovery areas. A fixed payphone should be provided in the foyer. Payphone socket-outlets should be provided in the recovery areas for use with a telephone trolley and/or a portable telephone. Consideration should be given to use of a payphone by a person in a wheelchair and a person with impaired hearing. See also paragraph 6.99.

### General store

**4.88** A general store should be provided for the storage of mobile and loose items of medical and other equipment and for general supplies. Floor space where items of mobile equipment and a linen exchange trolley can be parked, and shelving for storage, are required. Endoscope packing cases may be stored here.

### Trolley bay

**4.89** Space is required to park one patient's trolley per endoscopy room. The space may be provided with each room or in (a) trolley bay(s) close to two or more

endoscopy rooms. Trolley parking space is required mainly in connection with endoscopic procedures carried out on in-patients.

#### **Wheelchair park**

**4.90** Space should be provided to park wheelchairs. The wheelchair park should be located close to the endoscopy rooms and may be combined with the trolley bay.

#### **Disposal hold**

**4.91** A disposal hold is required where bags of soiled linen for reprocessing, SSD returns, bags of refuse for disposal and other items, as appropriate, can await removal by portering staff. Bagged items should be identified appropriately, using a colour-code system, in accordance with local policy.

**4.92** The floor space should be clearly sub-divided in order that the types of commodity are separate from each other. This will not only assist rapid collection but should minimise the risk of items for reprocessing being accidentally taken for disposal by incineration.

**4.93** The hold area should be located near the exit from which collections will be made.

**4.94** Project teams should examine the size of the hold in relation to the anticipated maximum load on the space, for example the largest number of bags of soiled linen and refuse and SSD returns likely to be held at any one time. The maximum load will be influenced mainly by the workload of the unit and the frequency of collections. If the hold appears to be inadequate in size, consideration may be given to increasing the frequency of collection as an alternative to providing a larger hold.

#### **Switchcupboard**

**4.95** A unit switchcupboard, with lockable doors, housing the main isolators and distribution fuse switchgear should be:

- a. accessible directly from a circulation area (access space may be part of the circulation area);
- b. sited away from water services;
- c. lockable.

**4.96** The switchcupboard, where possible, should be sited within the unit. There should be clear and safe access for maintenance staff and care should be taken to ensure that safety is not compromised, during maintenance, from passing traffic or the opening of adjacent doors.

## 5.0 Other general functional and design requirements

### Introduction

5.1 This chapter contains additional guidance on aspects of function and design which are common to all health buildings.

### Statutory and other requirements, including Crown immunities

5.2 The guidance takes account, as far as possible, of all statutory and other requirements in force at the time of publication, but health authorities and trusts are reminded of their responsibility for ensuring compliance with all relevant statutes, regulations, codes and standards. Advice on this is given in HC(88)60/HC(FP)(88)29 (in Wales, WHC(89)20).

5.3 With the general removal of Crown immunity, building and planning law are legally enforceable on the NHS. Guidance on the removal of Crown immunity is given in HN(90)27/LASSL(90)15 (in Wales, WHC(91)4) in respect of a wide range of legislation.

### Fire precautions

5.4 It is essential that project teams familiarise themselves with the guidance in the Firecode series of documents which together contain the Department's policy and technical guidance on fire precautions in hospitals and other NHS premises. In particular, the need for structural fire precautions and means of escape from the whole accommodation must be taken into account at the earliest possible planning stage. The key documents are Health Technical Memorandum 81 - 'Firecode: Fire precautions in new hospitals' and its Supplement 1.

5.5 General policy, principles and key management guidance are contained in 'Firecode: Policy and principles'. Other Firecode documents include the Health Technical Memoranda '80' series (which gives technical guidance on various building, engineering and equipment issues), and the Fire Practice Notes series (dealing with various specialist aspects of fire precautions). Existing HTMs will, in due course, be re-issued in Firecode format. The series includes 'Firecode: Directory of fire documents' which lists references to relevant legislation and relevant fire precautions guidance issued by the Department of Health and other sources, for example the Home Office.

5.6 Firecode and publications in the HTM 80 series are listed in the Bibliography at the end of this HBN.

5.7 It is important to establish during the design stage those aspects of fire safety strategy which affect the design, configuration and structure of a project. At appropriate stages of the design process, the architect and engineer should discuss and verify their proposals with the local fire authority, and ensure that the project team and all other planning staff are fully acquainted with the fire safety strategy for the design in terms of operation (staff responsibilities, etc), equipment provision, and buildings and engineering layouts. Health Technical Memoranda 57 to 60 give detailed information for the selection of fire-resisting building components.

5.8 The principles of fire safety apply equally to new projects and to alterations and upgrading of existing buildings.

### Security

5.9 The problem of thefts of NHS property and staff and patients' valuables should be addressed. The risk to patients can be minimised by encouraging them not to bring valuables into the hospital. A security system needs to be provided for NHS property and staff valuables.

5.10 A well-managed and designed department with a pleasant ambience will help to reduce tension and latent security risks. An overt introduction of security grilles, etc may well be counter-productive.

5.11 The project team should discuss security with the officer-in-charge of the local police crime prevention department and the hospital or district security officer or adviser at an early stage in the design of the building. Fire and security officers should be consulted concurrently because the demands of fire safety and security may sometimes conflict. The attention of planners is drawn to NHS Management Executive circular HSG(92)22 (in Wales, WHC(92)86) about security and the revised NHS Security Manual to which it refers.

5.12 Where violent incidents are foreseeable, employers have a duty under Section 2 of the Health and Safety at Work etc Act to identify the nature and extent of the risk and to devise measures which would provide a safe workplace and a safe system of work. Such measures should reflect the guidance given in the Health Service

Advisory Committee report 'Violence to staff in the health service', issued in 1987.

5.13 The security policy for individual departments should be compatible with that for the whole hospital.

5.14 The risk of vandalism must be assessed locally: it is an issue that is affected by the location of a hospital and the location of a department within a hospital. Designers should avoid placing easily-damaged targets for vandalism on buildings that are not used on evenings and weekends and not subject to frequent scrutiny by staff or passers-by.

## Building components

5.15 The Building Components Database consists of a series of Health Technical Memoranda (HTMs) which provide specification and design guidance on building components for health buildings which are not adequately covered by current British Standards. No firms or products are listed. The numbers and titles of the HTMs in the series are listed in the Bibliography.

## Upgrading or adaptations of existing buildings

5.16 The standards set out in this guidance essentially apply to the provision of accommodation by new building. However, the principles are equally valid and should be applied, so far as is reasonably practicable, when existing accommodation is being upgraded or new accommodation is being constructed within an existing building which may previously have been used for other purposes. Compromises may have to be made between Health Building Note (HBN) standards and what is possible.

5.17 Before a decision is made to carry out an upgrading project, consideration must be given to the long-term strategy for the service, the space required for the new service, and the size of the existing building. Regard must also be paid to the orientation and aspect of the building, whether or not key HBN requirements can be met: for example, the need for accommodation with ground level access, and the adequacy and location of all necessary support services.

5.18 If a prima facie case for upgrading emerges, the functional and physical condition of the existing building should be thoroughly examined. The check of physical and other aspects of existing buildings should include:

- availability of space for alterations and additions;
- type of construction;
- insulation;

- age of the buildings, condition of fabric, for example external and internal walls, floors, roofs, doors and windows, which may be determined by a condition survey;
- life expectancy and adequacy of engineering services, ease of access and facility for installation of new wiring, pipework and ducts, if required; the height of ceilings. Operating theatres, for example, require a minimum ceiling height. High ceilings do not necessarily call for the installation of false ceilings, which are costly and often impair natural ventilation;
- changes of floor levels to obviate hazards to disabled people;
- fire precautions;
- physical constraints to adaptation such as load-bearing walls and columns.

5.19 When comparing the cost of upgrading or adapting an existing building to that of a new building, due allowance, in addition to the building cost, must be made for the cost of relocating people, demolition, salvage costs, disruption of services in a phased project, and the temporary effects on running costs of any impaired functioning of areas affected by upgrading.

5.20 The cost of upgrading work should conform to the guidelines indicated in the Department's WKO letter (81)4 (in Wales, AWO(81)8). Those guidelines take into consideration the estimated life of the existing building and the difference in cost between upgrading a building and new building.

# 6.0 Engineering services

## Introduction

**6.1** This chapter describes the engineering services contained within an endoscopy unit and how they integrate with the engineering system serving the whole site. The unit is assumed to be located on an acute general hospital site where primary engineering services are conveniently available. Guidance on the provision of boilers, standby generators, refrigeration plant, etc has therefore been omitted.

**6.2** The guidance should acquaint the engineering members of the multidisciplinary design team with the criteria and materials specifications needed to meet the functional requirements.

**6.3** Documents referred to by number, for example<sup>0</sup>, are listed at the end of this chapter. Each repeated reference retains the same number.

## Model specifications

**6.4** A series of model specifications for specialised engineering services in health care buildings is available through NHS Estates\* and these are sufficiently flexible to reflect local needs. The engineering cost allowance is based on the qualities of material and workmanship described in the relevant parts of the specifications.

## Economy

**6.5** Engineering services are a significant proportion of the capital cost and thereafter remain a continuing charge on revenue budgets. The project design engineer should therefore ensure:

- a. economy in initial provision, consistent with meeting functional requirements and maintaining clinical standards;
- b. optimum benefit from the total financial resources these services are likely to absorb during their lifetime.

**6.6** Where alternative design solutions are available, the consequential capital and running costs should be compared using option appraisal techniques.<sup>1</sup>

**6.7** The economic appraisal of alternative locations and design solutions should include the heat conversion and distribution losses to the point of use. Where buildings are

located remote from the development's load centre, these losses can be significant.

**6.8** Energy management and facilities offered by a building management system should be considered to enable some measure of energy accounting to be exercised within the unit.

**6.9** In view of the increasing cost of energy, the project team should consider the economic viability of heat recovery from mechanical ventilation systems. Designers should ensure that those services which use energy do so efficiently.

## Maximum demands

**6.10** The estimated maximum demand and storage requirement, where appropriate, for each engineering service will need to be assessed individually to take account of the size, shape, geographical location, operational policies and intensity of use of the unit. As a guide, and for preliminary planning purposes only, the estimated maximum demands for an endoscopy unit with two endoscopy rooms are set out below:

Service	Typical max demand	Notes
Heating/ventilation (kW)	125	
Domestic hot water (l/s) peak simultaneous demand	1.7	
Cold water (l/s)	1.4	
Supply ventilation (m <sup>3</sup> /s)	1.9	
Extract ventilation (m <sup>3</sup> /s)	1.25	
Refrigeration, chilled water (kW)	24	
Electrical (kVA)		
lighting	14	includes essential 6 kVA
fixed power	12	includes essential 6 kVA
small power	56	includes essential 20 kVA
Medical gases (l/min)		
oxygen	184	
vacuum	210	

\* NHS Estates, Department of Health, Publications and Marketing Unit, 1 Trevelyan Square, Boar Lane, Leeds LS1 6AE Tel 0532 547000.

## Activity Data

**6.11** Environmental and engineering technical data and equipment details are described in the activity data A-Sheets which are listed in Chapter 8. They should be referred to for space temperatures, lighting levels, outlets for power, telephones, equipment details etc.

**6.12** Section 6 of the Health and Safety at Work etc Act 1974,<sup>2</sup> as amended by Schedule 3 of the Consumer Protection Act 1987,<sup>3</sup> imposes statutory duties on all persons who design, manufacture, import, supply, install or erect “articles for use at work”. One of the requirements of this Section is to ensure, so far as is reasonably practicable, that the article is designed and constructed so that it will be safe and without risks to health at all times when it is being set, used, cleaned or maintained by a person at work. All parts of engineering systems are covered by the term “articles for use at work”.

## Fire Safety

**6.13** Firecode contains the Department’s policy and technical guidance on fire safety in hospitals and other NHS premises. Firecode includes:

- HTM 81 - ‘Fire precautions in new hospitals’ and Supplement 1;<sup>4</sup>
- HTM 82 - ‘Alarm and detection systems’;<sup>5</sup>
- HTM 83 - ‘Fire safety in healthcare premises: general fire precautions’;<sup>7</sup>
- HTM 85 - ‘Fire precautions in existing hospitals’ (in preparation);
- HTM 86 - ‘Fire risk assessment in hospitals’ (in preparation).

**6.14** HTM 82 gives guidance on the siting of audible and visual alarms. Sounders should be sited so that adequate noise levels are obtained throughout the area. It is undesirable to have patients disturbed by loud noise when the fire alarm operates. A large number of quieter sounders, rather than a few very loud sounders, will be necessary to prevent noise levels in some areas becoming too high. The aim should be to restrict the tonal noise level throughout the area to 15 dBA above the notional level.

## Noise

**6.15** Excessive noise and vibration generated and transmitted by engineering services, generated internally within the unit or transmitted from an external source, can adversely affect the operational efficiency of the unit and can cause patient and staff discomfort. Compliance with the limits and means of control advocated in Hospital

Design Note 4,<sup>8</sup> including its revisions,<sup>9</sup> and Engineering Data Sheet DH1,<sup>10</sup> should provide an acceptable acoustic environment. Careful design of ventilation systems is required to ensure that they do not transmit noise or generate unacceptable sound levels within the working space. In addition, ventilation systems must not transmit conversations to adjoining rooms or spaces.

## Space for plant and services

**6.16** Space for plant and services should provide:

- a. easy and safe means of access, protected as far as possible from unauthorised entry;
- b. for frequent inspection and maintenance;
- c. for eventual removal and replacement of plant.

**6.17** Recommended spatial requirements for mechanical, electrical and public health engineering services are contained in HTM 23.<sup>11</sup> The information in this HTM is specifically intended for use during the initial planning stages when precise dimensional details of plant are not available.

**6.18** The distribution of mechanical and electrical services to final points of use should, wherever possible, be concealed in walls and above ceilings and provided with sufficient access panels for inspection and maintenance. Heat emitters should be contained within a 200 mm wide perimeter zone under window sills and critical dimensions should be taken from the boundary of this zone.

**6.19** The 200 mm zone includes the floor area occupied by minor vertical engineering ducts and is included in the building circulation allowance.

**6.20** Services contained in the space above the false ceiling of this unit, with the exception of drainage, should be confined to those required for the unit.

## Access to control and isolation devices

**6.21** Devices for control and safe isolation of engineering services should be:

- a. located in circulation rather than working areas;
- b. protected against unauthorised operation;
- c. clearly visible and accessible, where intended for operation by the unit’s staff.

## Engineering commissioning

**6.22** The engineering services should be commissioned in accordance with the validation and verification methods

identified in the latest HTMs. Engineering services for which a specific HTM is not currently available should be commissioned in accordance with HTM 17.<sup>12</sup> This HTM also describes the requirements which should be included in the contract documents. Flow measurement and proportional balancing of air and water systems require adequate test facilities, for example orifice plates, venturi valves etc, to be incorporated at the design stage.

## MECHANICAL SERVICES

### Heating

#### Ancillary accommodation

**6.23** Spaces heated by low pressure hot water systems should use radiators of the low surface temperature type. Surface temperatures should not exceed 43°C. Exposed hot water pipework, accessible to touch, should be insulated. See Health Guidance Note - “Safe” hot water and surface temperatures’.<sup>21</sup>

**6.24** Radiators should normally be located under windows or against exposed walls, with sufficient clear space between the top of the radiator and the window sill to prevent curtains reducing the output. There should be adequate space below to allow cleaning machinery to be used. Where a radiator is located on an external wall, back insulation should be provided to reduce the rate of heat transmission through the building fabric.

**6.25** All radiators should be fitted with thermostatic radiator valves. These should be of robust construction and selected to match the temperature and pressure characteristics of the heating system. The thermostatic head, incorporating a tamper-proof facility for presetting the maximum room temperature, should be controlled via a sensor located integrally or remotely, as appropriate. To provide frost protection at its minimum setting, the valve should not remain closed below a fixed temperature.

**6.26** Radiators may also be used to offset building fabric heat loss in mechanically ventilated spaces.

**6.27** Consideration should also be given to modulating the flow temperature to heating appliances in accordance with the external ambient temperature.

**6.28** Heating throughout the unit should be controlled by the building management system to “set back” temperatures to 10°C during “out-of-use” hours. A manual override should restore all plant promptly to full operational status.

### Ventilation

#### Ancillary accommodation

**6.29** Endoscopy rooms will be comfort-cooled as described later, but some other areas will be mechanically ventilated.

**6.30** Air movement induced by mechanical ventilation should be from clean to dirty areas, where these can be defined. The design should allow for an adequate flow of air into any space having only mechanical extract ventilation, via transfer grilles in doors or walls. Such arrangements, however, should avoid the introduction of untempered air and should not prejudice the requirements of fire safety or privacy.

**6.31** Mechanical ventilation should ensure that both supply and extract systems are in balance, taking due account of infiltration where appropriate.

**6.32** Fresh air should be introduced via a low velocity system and should be tempered and filtered before being distributed via high-level outlets. Diffusers and grilles should be located to achieve uniform air distribution within the space without causing discomfort to patients.

**6.33** Ventilation supply plant should include air filters having a minimum arrestance of 85% when tested in accordance with BS6540 Part 1.<sup>13</sup> In urban or other areas of high atmospheric pollution, a higher standard of filtration may be economically justified to reduce the level of staining to internal finishes. Filters must be readily accessible for replacement and should be provided with a pressure differential indicator and alarm.

**6.34** The supply plant for ancillary accommodation, if required, should be separate from the plant serving the endoscopy rooms.

**6.35** A separate extract system will be required for “dirty” areas, for example toilet facilities. It should operate continuously throughout the day and night. A dual motor fan unit with an automatic changeover facility should be provided.

**6.36** External discharge arrangements for extract systems should be protected against back pressure from adverse wind effects and should be located to avoid re-introduction of exhausted air into this or adjacent buildings through air intakes and windows.

#### Substances hazardous to health

**6.37** The Health and Safety Executive has published guidance notes, updated annually, on occupational exposure limits (Guidance Note EH40: Occupational Exposure Limits)<sup>14</sup> for the control of exposure by inhalation

of substances hazardous to health. The limits specified form part of the requirements of the Control of Substances Hazardous to Health (COSHH) Regulations 1988.<sup>15</sup> The current occupational exposure standard (OES) for glutaraldehyde, for example, is 0.2 ppm.

**6.38** The most commonly used disinfectant solution is glutaraldehyde. Where such a solution is used, "local exhaust ventilation will be required". See Safety Action Bulletin SAB(92)17.<sup>16</sup>

**6.39** To ensure compliance with the OES, disinfection of endoscopes with solutions of glutaraldehyde should be carried out in a cabinet which has a separate mechanical ventilation extract system which exhausts to the open air or effectively recirculates the air using suitable absorption filtration methods. The face velocity or control velocity is the primary characterising parameter. However, the direction and stability of the air flow is as important as the quantity. Provision should be made for the front cover, to be pulled down to close off the enclosure apart from a minimum opening of 25 mm across the width of the enclosure.

**6.40** The type of endoscope washing machine used will determine the design of enclosure.

**6.41** If a fully-automatic machine is not used, the making-up and the disposal of used glutaraldehyde solution and rinsing water should also be carried out within a local exhaust ventilation enclosure.

**6.42** Personal protective equipment, including respirators, should be on hand to deal with spillages and also leaks on automatic cleaning machines. This equipment should not, however, be the primary control measure.

**6.43** More comprehensive guidance will be contained in HTM 2025<sup>17</sup> (in preparation).

### Endoscopy rooms

**6.44** As the type of endoscopy procedures carried out in this type of unit do not require sterile conditions, the level of control on the air paths is not an important factor. The system should be designed primarily to offset the heat gain from equipment and occupants within the room. Care should be taken to achieve good air diffusion within the room and prevent cold draughts on the occupants. Humidity levels should be assessed at the design stage in order to ascertain whether humidifiers are required to prevent humidity falling to a level which would cause discomfort, especially dry eyes with the long-term use of VDTs.

### Endoscopy room plant

**6.45** The design and installation requirements of the endoscopy room ventilation plant should comply with 'The control of legionellae in healthcare premises - a code of practice'<sup>19</sup> and the relevant sections of the model engineering specification.

**6.46** While it is possible to have one air handling plant (with zonal coils) serving more than one endoscopy room, consideration should be given to using independent plant. An economic and operational appraisal should be undertaken to assess the best option for each project.

**6.47** Recirculation of air is possible but not recommended. Alternative methods of reducing energy consumption should be considered.

**6.48** Pre- and main filters should be provided. The pre-filter should have a gravimetric efficiency of at least 80% against BS6540<sup>13</sup> and the main filter should have a gravimetric efficiency of at least 95% against the same test.

**6.49** Air-cooled condensers must be used for heat rejection from refrigeration plant.

**6.50** If humidification is found to be necessary, steam is the recommended medium and should be generated locally to avoid distribution losses. Potable water fed from a tank supply should be used. Water treatment may be necessary.

### Plant control and indication

**6.51** The ventilation system serving the endoscopy rooms may be turned off during periods of non-use. This should be taken into consideration when assessing the feasibility of providing independent ventilation plant for each endoscopy room. The design should ensure, however, that the overall supply and extract systems remain in balance when one or more endoscopy rooms are switched out of use. These systems will need to be reinstated in advance of the endoscopy session. This can be accomplished by the building management system or sensors which detect the presence of staff within the particular endoscopy room. The system should be automatically reinstated if the space temperature falls below 10°C. Under these conditions, humidification should not be provided. It is not considered necessary to set an upper temperature limit at which the ventilation should be reinstated.

**6.52** Within each endoscopy room, plant status and temperature indication, together with a means of adjusting the set points, should be provided. Care should be taken to ensure that these room-mounted controls are capable of being cleaned. Ideally, they should be flush mounted with no dust-collecting recesses.

## Hot and cold water services

**6.53** The requirements for the control of legionellae bacteria in hot and cold water systems are set out in 'The control of legionellae in healthcare premises - a code of practice'.<sup>19</sup> Pipework routes and installation should reflect the need to comply with these requirements.

**6.54** Guidance on the design and installation of cold water supply and distribution systems is contained in HTM 27.<sup>20</sup>

**6.55** All cold water pipework, valves and fittings should be economically insulated and vapour sealed to protect against frost, surface condensation and heat gain.

**6.56** The domestic hot water supply should be taken from the general hospital calorifier installation at a minimum outflow temperature of  $60^{\circ}\text{C} \pm 2.5^{\circ}\text{C}$  and distributed to all outlets so that the return temperature at the calorifier is not less than  $50^{\circ}\text{C}$ . See Health Guidance Note "'Safe" hot water and surface temperatures'.<sup>21</sup>

## Deionised/sterile water

**6.57** Deionised/sterile water may be required for final rinsing of endoscopes after disinfection by glutaraldehyde. The water will normally be obtained in sealed containers from the pharmacy department.

## Piped medical gases and vacuum

**6.58** Guidance generally on piped medical gas systems and gas storage is contained in HTM 2022.<sup>22</sup> Details of the numbers and types of terminals required for the endoscopy room and recovery areas can be found in the appropriate A-Sheets listed in Chapter 8.

**6.59** The supply to the unit and to each endoscopy room should be capable of isolation.

**6.60** Anaesthetic gas scavenging is not required.

## ELECTRICAL SERVICES

### Electrical installation

**6.61** The installation should comply in all respects with the current IEE Wiring Regulations for Electrical Installations<sup>24</sup> and conform to the requirements of HTM 2007.<sup>25</sup>

**6.62** The point of entry for the electrical supply should be a switchcupboard housing the main isolators and distribution equipment. This space will also be the

distribution centre for subsidiary electrical services. Whenever possible, equipment should be mounted at a height which gives easy access from a standing position. Switchgear should be lockable in the "off" position.

**6.63** The electrical installation in occupied areas should be concealed using PVC insulated cable and screwed steel conduit or trunking but, in certain circumstances, mineral insulated metal sheathed cables may be necessary. External installations should use PVC insulated cables in galvanised screwed steel conduit with waterproof fitting.

## Electrical interference

**6.64** Care should be taken to avoid mains-borne interference and electrical radio frequency interference affecting physiological monitoring equipment, computers and other electronic equipment used here or elsewhere on the site. Guidance on the avoidance and abatement of electrical interference is contained in HTM 2014.<sup>26</sup>

**6.65** Fluorescent luminaires should comply with BS5394.<sup>27</sup>

## Lighting

**6.66** Colour finishes and lighting throughout the unit should be coordinated to create a calm and welcoming atmosphere. Practical methods are contained in the CIBSE Lighting Guide LG2.<sup>28</sup>

**6.67** Architects and engineers should collaborate to ensure that decorative finishes are compatible with the colour rendering properties of the lamp and that the spectral distribution of the light sources is not adversely affected. For lighting in patient assessment, treatment and recovery areas, also see paragraph 3.29.

**6.68** Luminaires should be manufactured and tested in accordance with the requirements specified in the relevant sections of BS4533.<sup>29</sup> Their location should afford ready access for lamp changing and maintenance, but with the overriding requirement that the recommended standard of illuminance is provided to the task area.

**6.69** Sufficient manual switches should be provided to allow some flexibility in the general or local level of illumination. This is particularly relevant in areas away from windows, where daylight can vary significantly. In these instances, careful consideration will need to be given to the location and number of luminaires connected to a circuit.

**6.70** Generally, luminaires should be fitted with fluorescent lamps: intermittently and infrequently used

luminaires may be fitted with compact fluorescent or incandescent lamps.

**6.71** Mobile examination luminaires, where provided, should operate at extra low voltage, be totally enclosed and be equipped with a heat filter. The temperature of external surfaces should be such as to avoid injury to patients and staff. The luminaires should comply with the requirements of BS4533:Part 102.55<sup>29</sup> and with the performance specification, type A, Part 103.2.<sup>29</sup>

**6.72** In areas where computer terminals are to be used, please see paragraph 2.32(b) and, for further guidance, the CIBSE Lighting Guide LG3.<sup>30</sup>

**6.73** The lighting of corridors, stairways and other circulation areas, which generally are areas not covered by activity data A-Sheets, should be in accordance with the guidance contained in HBN 40.<sup>31</sup>

**6.74** Safety lighting should be provided on primary escape routes in accordance with HTM 2011<sup>32</sup> and BS5266.<sup>33</sup>

### Endoscopy rooms

**6.75** The visual environment within the endoscopy room is very important both to the staff and to the patient. With the increasing use of videoscopes and other equipment having VDTs, the design of the visual environment should prevent high-luminance reflections on VDT screens. Static and dynamic luminance imbalances need also to be minimised. General advice is contained in the CIBSE Lighting Guide LG3.<sup>30</sup> To monitor patients during procedures, it is necessary that the illuminance is at an acceptable level, with clinical colour-rendering characteristics. Good lighting design will prevent these requirements compromising each other.

**6.76** Two-way switching of the luminaires should be available, with one set of switches located within the nurse area of the endoscopy room. The luminaires should be dimmable and fed from a separate circuit on the essential electrical supply in accordance with HTM 2011.<sup>32</sup> Task lighting may be necessary and should be considered, especially at the preparation worktop and over the accessories trolley.

**6.77** When planning the lighting layout, consideration needs to be given to the location of all ceiling-mounted services.

### Illuminated signs

**6.78** The radiation protection adviser should be consulted to determine the need for illuminated signs and interlocks between equipment and doors. Where required,

the sign lamp should give a clear indication in red when equipment is energised and may incorporate the legend "Do not enter", visible only when illuminated. All warning lamps should have incandescent filaments energised from a suitable power source within the room and switched via appropriate devices interlocked with the operation of the equipment.

### Controlled Drugs cupboard

**6.79** A red indicating lamp should be provided on each Controlled Drugs cupboard in accordance with HC(77)16 (in Wales, WHN(77)32).<sup>35</sup> Repeat indicating lamps, where appropriate, should be fitted outside the doorway to the room in which the cupboard is located and at the corresponding staff base and, after working hours, in a continuously manned area external to the unit. All lamps should be interlocked with the cupboard to give visual indication when the cupboard is unlocked. An indicating lamp denoting that the circuit is energised should be fitted to each cupboard.

**6.80** The circuits for all these indicating lamps should be derived from the essential supply. For further information see HTM 63 - 'Fitted storage systems'<sup>36</sup> and its associated specification for electrical services. The cupboards should be in accordance with BS2881.<sup>37</sup>

### Socket-outlets and power connections

**6.81** Sufficient 13-amp switched and shuttered socket-outlets, connected to ring or spur circuits, should be provided to supply all portable appliances likely to be used simultaneously. The installation of twin outlets should be considered where activities occur in juxtaposition.

**6.82** To enable domestic cleaning appliances with flexible leads (9 metres long) to operate over the whole of the unit, switched socket-outlets should be provided in corridors, and in individual rooms where considered necessary.

**6.83** Appliances requiring a three-phase supply, or those rated in excess of 13 amp single phase, should be permanently connected to separate fused sub-circuits. The sub-circuits should be fed from the distribution board and terminate at a local isolator. Fixed appliances, less than 13 amp rating, should be permanently connected to a double-pole switched 13 amp spur outlet. The spur outlet should contain an indicating light, where appropriate, and a suitable fuse.

**6.84** Isolation switches should be provided adjacent to all engineering plant and equipment for use by maintenance staff.

**6.85** Heating appliances and automatic equipment should have indicator lights to show when they are energised. Such Indicators should be contained in the control panel of the apparatus, in the control switch, or in the socket-outlet from which the apparatus derives its supply.

**6.86** The electrical supply connections to electro-medical equipment should comply with BS5724.<sup>38</sup>

**6.87** Advice on the power supply and requirements for mobile radiodiagnostic equipment is contained in HTM 2007.<sup>25</sup>

## Emergency electrical supplies

**6.88** Guidance on emergency electrical supplies is contained in HTM 2011.<sup>32</sup>

## Secondary entrance

**6.89** A door security intercommunication system is required between the secondary entrance and reception counter to prevent unauthorised entry while permitting free movement of staff. The system should provide for verbal communication with, and an electro-magnetically operated door lock to be controlled from, the reception counter.

**6.90** An override, located inside the secondary entrance, can provide staff with a convenient exit route for normal work or in the event of fire. The lock should disengage on initiation of the fire alarm system.

## Staff location system

**6.91** The hospital staff location system should be extended to include this unit.

## Patient/staff and staff/staff call systems

**6.92** Patient/staff call points should be provided in the patient preparation consulting/examination areas and in the recovery stage 1 area. Each call unit should comprise a push button or pull cord, reassurance lamp and reset unit. The audible alarm signal initiated by patients should operate for one second at 10-second intervals with corresponding lamps lit continuously until cancelled

**6.93** A visual and audible indication of operation should be provided at the appropriate staff base to give responding staff unambiguous identification of the call source.

**6.94** All call systems should operate at extra low voltage. Further guidance is contained in engineering data sheet DU3.<sup>43</sup>

**6.95** Central telephone facilities for internal and external calls will normally be available and should be extended to serve this unit. Telephones will normally be of the desk pattern. In recovery and adjacent areas they should be fitted with indicating call lights, bells or buzzers of subdued tone, and muting switches.

**6.96** Direct inward access (DIA) lines should be provided to telephone instruments located in the general office for patients' appointments. It is a local project decision as to whether direct dialling inward (DDI) lines should be provided.

**6.97** Intercommunication between the reception counter, the general office, staff bases and other areas can be provided by the telephone system. Abbreviated dialling can be used for a range of frequently-called extension numbers.

**6.98** Each endoscopy room should be provided with a splashproof line jack unit and a wall-mounted "hands-free" telephone with volume control.

**6.99** A fixed payphone should be provided in the foyer. Payphone socket-outlets should be provided in the recovery areas. Consideration should be given to use of a payphone by a person in a wheelchair.

**6.100** More comprehensive guidance on telephone systems is contained in HBN 48.<sup>44</sup>

## Wireways for data links

**6.101** Wireways will be required for cables to Interconnect electronic equipment. The extent to which these wireways should link all workstations in this unit and the main hospital system or elsewhere will depend on the local policy for automatic data processing.

**6.102** A CCTV wireway should be provided to link the endoscopy room to the seminar room. These links should use compatible communications trunking and separate conduits to terminal positions wherever possible.

## Electric clocks

**6.103** Clocks should operate in conjunction with a master clock system. If such a system is not available, synchronous clocks should be installed using a common clock circuit. The circuit should be suitable for future connection to a master system. Clocks should be installed

only where they can be viewed by a number of staff, patients and visitors.

## Music and television

**6.104** Outlets for background music should be provided in the main waiting area, patient preparation rooms, endoscopy rooms and recovery stage 2 area. Television outlets should be provided in the main waiting area and the recovery stage 2 area and may be supplied from the hospital system.

## Lightning protection

**6.105** Protection of the building against lightning should be provided in accordance with HTM 2007,<sup>45</sup> HSE Data Sheet DB2<sup>45</sup> and BS6651.<sup>46</sup>

## INTERNAL DRAINAGE

**6.106** The primary objective is to provide an internal drainage system which:

- uses the minimum of pipework;
- remains water- and air-tight at joints and connections;
- is sufficiently ventilated to retain the integrity of water seals.

## Design parameters

**6.107** General design guidance is contained in the relevant British Standards and Codes of Practice, including BS5572,<sup>47</sup> and the current building regulations.

Recommendations for spatial and access requirements for public health engineering services are contained in HSE Data Sheet EA5.<sup>48</sup>

**6.108** Chemicals such as solutions of glutaraldehyde should be disposed of in accordance with the local policy and the water authority's consent.

**6.109** The gradient of branch drains should be uniform and adequate to convey the maximum discharge to the stack without blockage. Practical considerations, such as available angles of bends, junctions and their assembly, as well as space considerations, usually limit the minimum gradient to about 1:50 (20 mm/m). For larger pipes, for example 100 mm diameter, the gradient may be less, but this will require workmanship of a high standard if an adequate self-cleaning flow is to be maintained. It is not envisaged that pipes larger than 100 mm diameter will be required within inter-floor or ground-floor systems serving this unit.

**6.110** Provision for inspection, rodding and maintenance should ensure "full bore" access and be located to minimise disruption or possible contamination. Manholes should not be located within this unit.

## Operational considerations

**6.111** Maintenance problems may arise as a result of misuse of the system, for example the disposal of paper towels down WCs. Appropriate disposal facilities should therefore be provided.

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## 7.0 Cost information

### Introduction

7.1 For all types of health buildings, it is important that building costs and revenue expenditure are kept as low as possible consistent with acceptable standards. Within this general context, Health Building Notes provide a synopsis of accommodation for health buildings which the Department of Health, in conjunction with the NHS, recommends for the provision of a given service.

### Works cost

7.2 To prepare an estimate of the works cost for a scheme, reference should be made to the Capricode Health Building Procedures Manual (Chapter 1, Stage 1, Annex 1.c). The total cost allowance for a scheme is derived by aggregating the cost of the functional units, Essential Complementary Accommodation (ECA) and Optional Accommodation and Services (OAS) as appropriate to the particular scheme.

7.3 The cost allowances cover the building and engineering requirements set out in this volume. In costing the functional units, it has been assumed that the endoscopy unit will be incorporated into an acute general hospital where the common use of services will be available.

### Functional unit

7.4 The functional unit for the endoscopy unit is the "endoscopy room". Two sizes of department have been costed containing two and four endoscopy rooms. The activity spaces and areas used for costing the functional units are listed in the Schedules of Accommodation at the end of this chapter.

### Essential Complementary Accommodation (ECA)

7.5 ECA comprises activity spaces which are essential to the running of the endoscopy unit, but which in certain circumstances may be available in a convenient location elsewhere in the hospital. The ECA costed in this volume is listed in the Schedules of Accommodation at the end of this chapter.

### Optional Accommodation and Services (OAS)

7.6 This volume, where appropriate, draws attention to alternative ways of providing services or facilities, including the likely cost implications. This information will enable project teams to select the solution which is most suitable to their needs. The OAS costed in this volume is listed in the Schedules of Accommodation at the end of this chapter.

### Dimensions and areas

7.7 In determining spatial requirements, the essential factor is not the total area provided but the critical dimensions, that is, those dimensions critical to the efficient functioning of the activities which are to be carried out. To assist project teams in preparing detailed design solutions for the rooms and spaces, studies have been carried out to establish dimensional requirements in the form of critical dimensions. The results of these studies appear as ergonomic diagrams in Health Building Note 40 - 'Common activity spaces'.

7.8 For development planning and at the earliest stage of design, it may be convenient for designers to have data available which will enable them to make an approximate assessment of the sizes involved. For this reason, the areas prepared for the purpose of establishing the cost allowances are included at the end of this chapter.

7.9 It is emphasised that the areas published do **not** represent recommended sizes, nor are they to be regarded in any way as specific individual entitlements.

### Circulation

7.10 Space for circulation, which includes allowances for planning provision, an engineering zone adjacent to the external walls, small vertical ducts and partitions, is shown in the Schedules of Accommodation and is included in the cost allowances.

### Communications

7.11 Staircases, lifts and plant rooms, with the exception of an electrical switchcupboard and a standard enclosure for medical gas isolation points, are not included in the cost allowances.

## Engineering services

**7.12** The following engineering services, as described in Chapter 6 and exemplified in the activity data, are included in the cost allowances. Primary engineering services are assumed to be conveniently available at the boundary of the department.

### a. Mechanical services

Heating: low pressure hot water system with thermostatic radiator control, maximum touch temperature 43°C.

Ventilation: mechanical supply and extract to the ancillary areas, including plant.

Air-conditioning: to the endoscopy rooms includes separate plant per endoscopy room, refrigeration plant and local steam generators (humidification).

Cold water service: supplied from potable central storage tanks to service points, hose reels fed from the incoming supplies.

Hot water service: supplied from a central storage system.

Medical gases: pipe supplies of oxygen and vacuum from the hospital system.

### b. Electrical services

Distribution board.

Lighting system: fluorescent, safety and emergency luminaires.

Power system: socket-outlets, outlets for equipment, supplies for ventilation plant and standby supplies.

Alarm system: fire, security, medical gases and drug cupboard.

Impulse clock system.

Staff location: extension from hospital system.

Staff/staff and patient/staff call system.

Telephone: wireways, wiring and outlets, but excluding handsets.

Data transmission: wireways only.

### c. Major items of equipment (Group 1)

X-ray viewers.

Controlled Drugs cupboard.

Alarm and ventilation plant indicator panels.

## Schedules of accommodation

Para. no	Activity space	2 endoscopy rooms		4 endoscopy rooms		
		Space area m <sup>2</sup>	Qty	Total area m <sup>2</sup>	Qty	Total area m <sup>2</sup>
<b>Entrance and reception</b>						
4.5	Draught lobby	11.0	1	11.0	1	11.0
4.6	Foyer		1	27.5	1	36.0
4.9	Reception		1	9.5	1	13.5
4.13	General office	14.0	1	14.0	1	14.0
4.14	Records trolley store	2.5	1	2.5	1	2.5
4.17	Main waiting		1	40.0	1	80.0
4.19	Play area		1	13.0	1	18.0
4.30	Disabled wc/wash - type 5	4.5	1	4.5	1	4.5
4.85	Visitors wc/wash -type 1	2.0	1	2.0	1	2.0
<b>Patient preparation areas</b>						
4.20	Patient preparation staff base/utility	10.5	1	10.5	1	10.5
4.22	Patient preparation room	6.5	3	19.5	5	32.5
4.28	Consulting/examination room	13.5	1	13.5	1	13.5
<b>Patient treatment rooms</b>						
4.36	Endoscopy	22.0	2	44.0	4	88.0
<b>Patient pre-discharge areas</b>						
4.57	Recovery: stage 1		1	83.0	1	145.5
4.59	Recovery: stage 2		1	22.0	1	40.0
4.61	Recovery staff base/utility	10.5	1	10.5	1	10.5
4.64	Resuscitation trolley bay	2.0	1	2.0	1	2.0
4.65	Beverage bay	8.0	1	8.0	1	8.0
4.83	Patients clothing store	4.0	1	4.0	1	4.0
4.89	Trolley bay		1	6.0	1	6.0
4.90	Wheelchair parking bay	1.5	1	1.5	1	1.5
<b>Patients sanitary facilities</b>						
4.66	Patients wc/wash - type 2	2.5	2	5.0	2	5.0
4.66	Patients wc/bidet/wash - type 7	4.0	1	4.0	1	4.0
4.67	Disabled wc/wash - type 5	4.5	1	4.5	1	4.5
<b>Staff facilities</b>						
4.71	Male staff change/locker room		1	21.0	1	30.5
4.71	Female staff change/locker room		1	21.0	1	30.5
4.74	Staff wc/wash - type 1	2.0	2	4.0	4	8.0
4.74	Staff shower - type 4	2.5	2	5.0	2	5.0
4.75	Staff rest room		1	16.0	1	18.5
4.77	Staff pantry	7.0	1	7.0	1	7.0
4.79	Unit directors office	11.0	1	11.0	1	11.0
4.80	Nurse managers office	9.0	1	9.0	1	9.0
4.81	Medical staff office	12.0	1	12.0	1	12.0
<b>Support spaces</b>						
4.47	Endoscope cleaning room and store	19.0	1	19.0	2	38.0
4.68	Dirty utility	6.5	1	6.5	1	6.5
4.88	General store		1	12.0	1	18.0
4.55	Mobile x-ray equipment bay		1	5.5	1	5.5
4.84	Unit cleaners room	7.0	1	7.0	1	7.0
4.91	Disposal hold		1	6.0	1	8.0
4.95	Switch cupboard		1	3.0	1	4.0
Net total				<b>527.0</b>		<b>775.5</b>
ADD - planning provision			5%	<b>26.4</b>	5%	<b>38.8</b>
Total				<b>553.4</b>		<b>814.3</b>
ADD - engineering zone			3%	<b>16.6</b>	3%	<b>24.4</b>
ADD - circulation			27%	<b>149.4</b>	27%	<b>219.9</b>
Total				<b>719.4</b>		<b>1,058.6</b>
<b>Departmental areas</b>				<b>720.0</b>	<b>m<sup>2</sup></b>	<b>1,060.0 m<sup>2</sup></b>

**Essential Complementary Accommodation**

		5%			3%		27%
Para. no	Activity space	Space area m <sup>2</sup>	Planning m <sup>2</sup>	Engineering m <sup>2</sup>	Circulation m <sup>2</sup>	Total area m <sup>2</sup>	
4.78	Seminar room	22.0	1.1	0.7	6.2	30.0	

**Optional Accommodation and Services**

		5%			3%		27%
Para. no	Activity space	Space area m <sup>2</sup>	Planning m <sup>2</sup>	Engineering m <sup>2</sup>	Circulation m <sup>2</sup>	Total area m <sup>2</sup>	
4.27	Sub-wait area (3 persons)	7.5	0.4	0.2	1.9	10.0	
4.27	Sub-wait area (5 persons)	9.5	0.5	0.3	2.7	13.0	
4.31	Patients shower - type 4	2.5	0.1	0.1	0.8	4.0	
4.34	Childrens reception	5.0	0.3	0.2	1.6	7.0	
4.78	Clinical nurse teacher	9.5	0.5	0.3	2.7	13.0	
4.82	Interview room	6.0	0.3	0.2	1.5	8.0	
4.59	Recovery play area (2 room unit)	12.0	0.6	0.4	3.5	16.0	
4.59	Recovery play area (4 room unit)	18.0	0.9	0.6	5.0	24.0	
4.86	Baby feeding and nappy changing	5.5	0.3	0.2	1.6	8.0	

## 8.0 Activity data

### Introduction

**8.1** “Activity data” is an information system developed to help project and design teams by defining the users’ needs more precisely. This information constitutes the computerised Activity DataBase, up-dated twice yearly. It comprises three types of information sheet: activity space data sheets (known as A-Sheets), their supporting activity unit data sheets (known as B-Sheets) and A-Sheet component listings (known as D-Sheets).

**8.2** A-Sheets record in more detail than is described in this volume each task or activity that is performed in a particular activity space (which may be a room, space, corridor or bay), together with environmental conditions and the technical data necessary to enable the activities to be performed. Each A-Sheet also contains a list of the titles and code numbers of the relevant B-Sheets.

**8.3** B-Sheets provide narrative text and graphics to scale relating to one activity. They show equipment fitted or supplied as part of the building, and the necessary engineering terminals.

**8.4** D-Sheets provide information about the total quantities of components (excluding those in Group 4 - see paragraph 1.10) extracted from all B-Sheets selected for inclusion in an individual A-Sheet.

**8.5** Activity data is only available in the form of magnetic media, but this may be used to generate paper copies where required.

**8.6** Further information about the use and preparation of activity data can be obtained from NHS Estates, Department of Health, 1 Trevelyan Square, Boar Lane, Leeds LS1 6AE.

### Activity data applicable to this volume

**8.7** The A-Sheets recommended for the activity spaces described in this volume are either new sheets, amended ones or selected from existing sheets. A list of A-Sheet code numbers and titles is given at the end of this chapter.

**8.8** Further activity data sheets may be selected, or drawn up by project teams to their own requirements, for any services not described in the volume or included in the list.

**8.9** In order to ensure consistent and economic provision, variations from the A-Sheets recommended for the spaces covered in this volume should be considered only where it has been decided that the function of a space will differ substantially from that described.

### Lists of activity data A-Sheets

**8.10** The activity data A-Sheets listed below may not carry a title identical to the activity spaces detailed in this volume. Use of the appropriate A-Sheet code number will, however, result in the correct activity space being accessed.

**8.11** The activity data A-Sheets are listed below in the same order as the spaces to which they relate are listed in the Schedules of Accommodation (Chapter 7).

**8.12** Some of the A-Sheets listed below relate specifically to an endoscopy unit with two endoscopy rooms. For smaller or larger sizes of unit the A-Sheets will need to be amended as appropriate.

Activity space	A-Sheet code no	Para no in HBN
1. Main entrance: entrance canopy	J0125	4.3
2. Main entrance: draught lobby	J0107	4.5
3. Main entrance: foyer	J0137	4.6
4. Reception: counter	JO202	4.9
5. Office: general administration	M0211	4.13
6. Main waiting area: 12 places	J1132	4.17
7. Waiting: play area, up to 6 children	J1403	4.19
8. WC/washroom: unisex, disabled/wheelchair	V1112	4.30
9. Washroom/WC: 1 person with mirror, hand-wash basin	V1007	4.85
10. Staff base: patient monitoring	T0125	4.20
11. Patient changing: 1 person with washing facilities	V0702	4.22

Activity space	A-Sheet code no	Para no in HBN	Activity space	A-Sheet code no	Para no in HBN
12. Consulting room: examination, general	C0216	4.28	38. Disposal hold: general	Y0603	4.91
13. Endoscopy room: treatment day endoscopy unit	X0221	4.36	39. Switchgear: room/cupboard	K0101	4.95
14. Recovery: pre-discharge, stage 1	B2513	4.57	40. Seminar room: 10 persons, with workstation	H0528	4.78
15. Recovery: pre-discharge, stage 2	B2514	4.59	41. Sub-waiting: 4 patients/ escorts	J1203	4.27
16. Staff base: pre-discharge	T0126	4.61	42. Shower: patient ambulant, with hand-wash	V1603	4.31
17. Parking bay: resuscitation trolley	G0104	4.64	43. Sub-waiting: children's reception area	J1225	4.34
18. Beverage bay: up to 30 persons	P0707	4.65	44. Interview room	M0712	4.82
19. Store: patients' clothing	W1406	4.83	45. Waiting: play area, up to 6 children	J1403	4.59
20. Parking bay: patient trolley	G0205	4.89	46. Washroom: nappy changing, baby feeding	V1210	4.86
21. Bay: wheelchair park	G0129	4.90	47. Entrance: staff and supplies	J0301	4.32
22. Washroom/WC: 1 place, with calls	V1116	4.29 4.66			
23. WC/bidet/wash: 1 place	V1103	4.66			
24. WC/washroom: unisex, disabled/wheelchair	V1112	4.67			
25. Staff changing: locker room, 14 persons	V0629	4.71			
26. Washroom/WC: 1 person With mirror, hand-wash basin	V1007	4.74			
27. Shower: 1 person	V0801	4.74			
28. Staff rest: up to 14 staff	D0510	4.75			
29. Pantry: up to 30 persons	P0616	4.77			
30. Office medical: unit director	M0317	4.79			
31. Office: senior nurse With trolley, computer and printer	M0236	4.80			
32. Office: medical, 2 staff day surgery	M0316	4.81			
33. Cleansing/disinfectant room: endoscope, suction bottle	Y0416	4.47			
34. Dirty utility: recovery operating department	Y0415	4.68			
35. Store: OPD, equipment/ supplies day hospital	W1107	4.88			
36. Bay: X-ray equipment, mobile	G0116	4.55			
37. Cleaners' room: with washing machine foot wear	Y1216	4.84			

# Appendix 1

## Glossary

### Endoscopy

1. Endoscopy is a general term relating to examination of a body passage or organ by means of an endoscope for purposes of diagnosis or treatment. Some procedures that formerly required a surgical operation can now be performed much more simply using an endoscope.

2. An endoscope is an instrument inserted into the body in order to carry out endoscopic procedures. There are three main types of endoscope:

- a. a rigid endoscope. This is a straight, narrow viewing tube with a light source attached;
- b. a flexible endoscope. A typical flexible endoscope consists of a bundle of light-transmitting fibres (fibre optics). At one end is the head (with a viewing lens and steering device) and a power source. The other end, the tip, has a light, a lens, and an outlet for air and water. Side channels enable attachments to be passed to the tip;
- c. a video endoscope. This is similar to the flexible endoscope except that electronic signals are transmitted from the tip to a high-definition picture displayed on a TV monitor.

Figures 4A and 4B illustrate the three main types of endoscope and attachments which can be used with them. The video endoscope is shown with associated support equipment. (Note: Figure 4A refers to a "laparoscope" and an "arthroscope". Laparoscopy and arthroscopy, however, are endoscopic procedures excluded from the scope of this HBN (see paragraphs 5, 14 and 16 of this appendix).

3. Specific terms are used for endoscopic procedures carried out in connection with specific parts of the body and to describe endoscopes used in specific parts of the body, for example bronchoscopy and bronchoscope respectively (see paragraph 10 below).

### Endoscopic procedures

4. The common endoscopic procedures which can be performed appropriately in the endoscopy unit described in this HBN include:

- bronchoscopy;
- colonoscopy;

- colposcopy;
- cystoscopy;
- gastroscopy;
- laryngoscopy;
- sigmoidoscopy.

Further information about these procedures, and the type of endoscopes used to perform them, is given in paragraphs 6 to 13 below.

5. The common endoscopic procedures which are excluded from the scope of this HBN for the reasons described in paragraph 1.6 are:

- a. arthroscopy;
- b. endoscopic retrograde cholangiopancreatography (ERCP);
- c. laparoscopy.

Further information about these procedures, and the type of endoscopes used to perform them, is given in paragraphs 14 to 16 below.

### Procedures within scope of HBN 52 Volume 2

6. Gastrointestinal endoscopy - endoscopy from the mouth downwards through the oesophagus and stomach to the duodenum and upwards from the anus through the colon to the end of the small intestine. Under special circumstances, the small intestine can also be examined. See also paragraphs 7, 8 and 9.

7. Gastroscopy (upper gastrointestinal endoscopy) - endoscopy of the lining of the oesophagus, stomach and duodenum (first part of the small intestine) by means of a gastroscope or oesophagogastroduodenoscope (a long, flexible, fibre-optic endoscope). See also paragraph 6.

8. Colonoscopy (lower gastrointestinal endoscopy) - endoscopy of the lining of the colon (the major part of the large intestine) by means of a colonoscope (a long, flexible, fibre-optic endoscope). See also paragraph 6 above.

9. Sigmoidoscopy (lower gastrointestinal endoscopy) - endoscopy of the lining of the rectum and the sigmoid colon (last parts of the large intestine) with a rigid or flexible sigmoidoscope or proctosigmoidoscope. See also paragraph 6 above.

10. Bronchoscopy - endoscopy of the bronchi, the main airways of the lungs, by means of a rigid or flexible bronchoscope.

11. Colposcopy - endoscopy of the cervix (neck of the uterus) and upper part of the vagina under illuminated magnification using a colposcope, a viewing instrument using a series of lenses to give different degrees of magnification.

12. Cystoscopy - endoscopy of the bladder by means of a rigid cystoscope inserted via the urethra. The urethra is the tube that conducts urine from the bladder to the exterior.

13. Laryngoscopy - endoscopy of the larynx (part of the upper airway) by means of a rigid or flexible laryngoscope.

**Procedures excluded from scope of HBN 52 Volume 2**

14. Arthroscopy - endoscopy of the interior of a joint by means of a rigid endoscope: it is used most frequently to inspect the inside of the knee joint. The procedure is usually performed under general anaesthesia, although sometimes a nerve-block is used.

15. Endoscopic retrograde cholangiopancreatography (ERCP) - an X-ray procedure for examining the biliary system and the pancreatic duct which involves passing an endoscope down the oesophagus, through the stomach and into the duodenum.

16. Laparoscopy - endoscopy of the abdominal structures by means of a rigid laparoscope passed through a small incision in the wall of the abdomen. Uses include determining the cause of pelvic pain or gynaecological symptoms. Laparoscopes are now used for female sterilisations and increasingly for other surgical procedures.

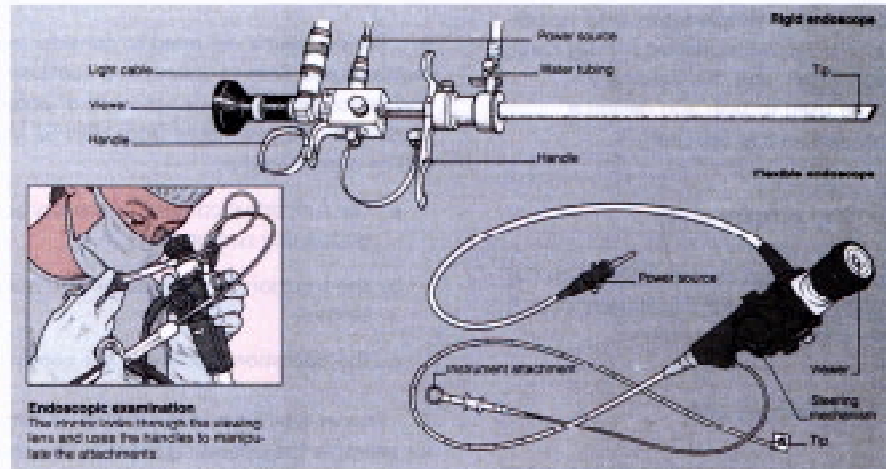
**ENDOSCOPES**

A typical flexible fibre-optic endoscope consists of a bundle of light-transmitting fibres. At one end is the head (featuring a viewing lens and steering device) and a power source. The tip has a light, a lens, and an outlet for air or water. Side channels enable attachments to be passed to the tip. In some endoscopes the tip may contain a camera that transmits a picture electronically to a screen.

A rigid endoscope is a straight, narrow viewing tube with a light source attached.

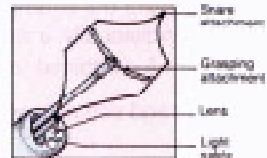
**COMMON TYPES OF ENDOSCOPES**

Instruments	Region	Nature
Cystoscope	Bladder	Rigid
Bronchoscope	Bronchi (main airways of the lungs)	Flexible or rigid
Gastroscope	Esophagus, stomach, and duodenum	Flexible
Colonoscope	Colon (large intestine)	Flexible
Laparoscope	Abdominal cavity	Rigid
Arthroscope	Knee joint	Rigid



**ATTACHMENTS**

Various specialized attachments are available for use with the endoscopes. They enable the doctor to perform diagnostic and therapeutic procedures such as taking a biopsy specimen (a small piece of tissue for analysis).



**Grasping forceps**

Sharp-toothed forceps allow foreign bodies to be grasped firmly and removed.



**Biopsy forceps**

These are used for taking small samples of tissue for microscopic analysis.



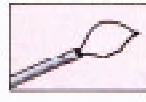
**Scissors**

They are used for cutting through tissue and removing small growths.



**Brushes**

Brush attachments are used to obtain cells for cytological examination.



**Snare**

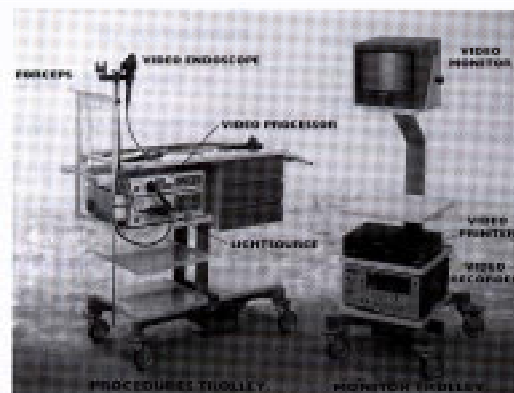
The thin wire loop, through which an electric current is passed, is used to remove polyps.



**Basket**

A wire basket is sometimes used to trap and remove stones from the bile duct.

Figure 4A has been reproduced from the British Medical Association's 'Complete Family Health Encyclopedia' by kind permission of the publishers, Doring Kindersley Adult.



Photograph in Figure 4B provided by KeyMed (Medical and Industrial Equipment) Ltd and reproduced with their kind permission.

# Appendix 2

## Combined day surgery and endoscopy unit

### introduction

1. This appendix describes in simple terms how Health Building Note (HBN) 52 - 'Accommodation for day care', Volume 1 - 'Day surgery unit' and this Volume 2 - 'Endoscopy unit' can be used to plan and design a combined day surgery and endoscopy unit.

### HBN 52 Volume 1 - 'Day surgery unit'

2. HBN 52 Volume 1 is relevant in connection with the requirements for accommodation for day surgery in a combined day surgery and endoscopy unit.

### HBN 52 Volume 2 - 'Endoscopy unit'

3. The spaces provided in the endoscopy unit described in HBN 52 Volume 2 compare with the spaces provided in the day surgery unit described in HBN 52 Volume 1 as follows:

- a. only three additional spaces are included, namely:
  - (i) the endoscopy room;
  - (ii) a resuscitation trolley bay;
  - (iii) a trolley bay;
- b. spaces associated with surgical procedures which are not required in connection with endoscopic procedures are excluded;
- c. the remaining spaces are identical, with the exception noted in paragraph 4 below.

4. The endoscopic cleaning room and store included in Volume 2 fulfils similar functions to the cleansing/disinfecting room in Volume 1. Methods of cleaning and disinfecting endoscopes are being improved and the endoscope cleaning room and store in Volume 2 incorporates technological developments made since the preparation of Volume 1.

### Combination of spaces from HBN 52 Volumes 1 and 2

#### *Schedule of accommodation*

5. The schedule of spaces for a combined day surgery and endoscopy unit may include the spaces described in HBN 52 Volume 1, plus two of the three additional spaces

described in Volume 2, that is, the endoscopy room and a trolley bay (see paragraph 3(a) above). Project teams may consider omitting the resuscitation trolley bay on the grounds that resuscitation equipment is included in the post-anaesthesia recovery room in the day surgery unit described in HBN 52 Volume 1.

6. Project teams will need to consider carefully the numbers and sizes of spaces in a combined day surgery and endoscopy unit. The schedule of accommodation for a combined unit assembled from HBN 52 Volumes 1 and 2 will be determined by:

- a. the functional content of the day surgery and endoscopy components;
- b. the functions of the spaces (see paragraphs 7 and 8 below);
- c. the operational policy of the combined unit.

7. Spaces which are dedicated for a particular function, for example the operating theatre, the anaesthetic room, the scrub-up and gowning area, the preparation room, the utility room etc, for day surgery, and the endoscopy room for endoscopy, should be provided in accordance with the schedules of accommodation in HBN 52.

8. The number and sizes of spaces which are shared by the day surgery function and the endoscopy function will need to be determined individually: a wide range of permutations is possible. A combined unit may require:

- a. the same number and size of spaces as allowed in Volume 1;
- b. more spaces of the same, or a smaller, size;
- c. the same number of, but larger, spaces.

9. Particular care should be taken in determining the number/size of:

- a. the waiting area;
- b. the patient preparation rooms;
- c. the pre-discharge recovery areas (referred to as recovery areas in Volume 2).

10. It is recommended that:

- a. project teams modify, as appropriate, the content of the cleansing/disinfecting room provided in the operating suite of the day surgery function to take account of technological improvements included in

- the endoscope cleaning room and store of the endoscopy function;
- b. provision of the cleansing/disinfecting room should be in accordance with the schedules of accommodation in HBN 52 Volume 1;
  - c. provision of the endoscope cleaning room and store should be in accordance with the schedules of accommodation in HBN 52 Volume 2.

*Relationships of spaces*

11. Project teams should seek to ensure that the requirements for intradepartmental and interdepartmental relationships, as expressed in HBN 52 Volumes 1 and 2, are maintained in plans for a combined unit.

# Appendix 3

## A method for calculating the number of endoscopy rooms required in an endoscopy unit

### Introduction

1. Appendix 3 provides a method which may be used to calculate the number of endoscopy rooms required in an endoscopy unit. The method is illustrated by worked examples.

### Definitions

*Workload per annum*

2. The **workload per annum** is the number of endoscopy cases to be performed in the endoscopy rooms of the endoscopy unit.

*Workload capacity of one endoscopy room*

3. The **workload capacity of one endoscopy room** is the number of endoscopy cases per annum that can be accommodated in one endoscopy room.

### Method

*Workload per annum*

4. The **workload per annum** must be forecast locally. In estimating the future number of endoscopy cases, account should be taken of a range of factors, including:

- the size and content of past and present workload;
- developments and increase in future workload;
- the demography of the population to be served.

*Workload capacity of one endoscopy room*

5. The **workload capacity of one endoscopy room** is the product of:

- a. the average number of cases per working day;
- b. the length of the working week;
- c. the length of the working year.

6. In identifying the average number of cases per working day, consideration should be given to the length of the working day: this may, for example, include provision for evening sessions, often preferred by patients.

7. The length of the working week should be at least 4.5 days.

8. The length of the working year would not be expected to be less than 48 weeks.

9. In calculating the workload capacity of one endoscopy room, account should be taken of local variations in the factors identified in paragraph 5, for example the inclusion of evening sessions (worked example 2, given in paragraphs 17 to 19, illustrates this point) and availability of medical staff to carry out the work.

### The number of endoscopy rooms required

10. The **number of endoscopy rooms required** in the endoscopy unit is the **workload per annum** divided by the **workload capacity of one endoscopy room**.

11. The number of endoscopy rooms required will seldom be an exact whole number. The factors influencing the answer should be examined to see if the number can be reduced; for example can the working day, week or year be lengthened so as to include a higher number of cases.

12. If the number of endoscopy rooms is only slightly below a whole number, it will generally be necessary to round up the answer: this will introduce a small amount of spare capacity.

### Worked examples

13. The method described above is illustrated by three worked examples.

*Worked example 1*

14. The following assumed figures are used in worked example 1 to illustrate the method:

- a. workload per annum (number of cases) = 7000;
- b. number of cases per working day = 18;
- c. length of working week in days = 4.5;
- d. length of working year in weeks = 48.

15. The workload capacity of one endoscopy room is  
 $18 \times 4.5 \times 48$  cases  
 $= 3888$  cases.

16. The number of endoscopy rooms required is  

$$\frac{7000}{3888}$$
 $= 1.80$   
 Rounded up = 2.

*Worked example 2*

17. The following assumed figures are used in worked example 2 to illustrate the method:

- workload per annum (number of cases) = 8000;
- number of cases per working day = 16;
- length of working week in days = 5;
- length of working year in weeks = 50;
- number of cases per evening session = 6;
- number of evening sessions per week = 2

18. The workload capacity of one endoscopy room is  
 $(16 \times 5 \times 50) + (6 \times 2 \times 50)$  cases  
 $= 4000 + 6000$  cases  
 $= 4600$

19. The number of endoscopy rooms required is:  

$$\frac{8000}{4600}$$
 $= 1.74$   
 Rounded up = 2.

*Worked example 3*

20. The following assumed figures are used in worked example 3 to illustrate the method:

- workload per annum (number of cases) = 10,000;
- number of cases per working day = 16;
- length of working week in days = 4.5;
- length of working year in weeks = 48.

21. The workload capacity of one endoscopy room is  
 $16 \times 4.5 \times 48$  cases  
 $= 3456$  cases.

22. The number of endoscopy rooms required is  

$$\frac{10,000}{3456}$$
 $= 2.89$   
 Rounded up = 3.

# Appendix 4

## Information management and technology network diagram (Figure 1) - glossary

### Introduction

1. This glossary explains the meaning of those terms used in connection with "Station functions" in Figure 1 (page 8 of this volume) that are not self-explanatory.
2. The need for security and confidentiality is stressed. One of the key principles of the NHS Information Management and Technology (IM&T) strategy is: "Information will be secure and confidential. Great care will be taken to ensure that the information held on computer will be available only to those who *need* to know it and who are *authorised* to know it."

### Orders

3. Electronically placing orders for tests, for example blood tests and X-rays, and clinical services, for example physiotherapy and audiology.
4. This function may also include the ability to enquire on the status of orders placed previously, for example "received", "being processed" and "completed".

### Results

5. Electronically receiving results of orders (paragraph 3), for example results of blood tests and X-rays, direct from clinical service departments.
6. This function may also include the ability:
  - a. for urgent results to be "automatically" referred for the attention of the responsible clinician;
  - b. to enquire on a series of results relating to a single patient.

### Order communications system

7. The "orders" and "results" functions are usually combined in an order communications system.

### Clinical coding

8. The process by which clinical information, for example diagnoses, symptoms and treatment, is entered into a computer in a coded form.

9. It is noted that one element of the NHS IM&T strategy is the development of a thesaurus of coded clinical terms and groupings.

### GP contact

10. A facility to exchange patient information with general practitioners, either by electronic mail or directly by means of a computerised communications network.
11. This facility is also a feature of the NHS IM&T strategy.

### Waiting lists

12. Access to a clinician's waiting list management system.

### Appointments

13. Maintaining, or making enquiries of, the appointments systems for the endoscopy unit and, for example, the out-patients department.

### Health records

14. Access to health records held electronically as text, coded data or digitised images, for example X-rays.

### Patient assessment

15. Access to a system which supports the structured assessment of a patient's requirement for clinical care and the systematic collection of data associated with the assessment.

### Care planning

16. Access to a system which supports:
  - a. the systematic planning of care appropriate to a patient's assessed needs;
  - b. the calculation of the amount of nursing resource, and the correct skill mix, necessary to deliver the planned care.

### Staff rosters

17. Maintenance of rosters for nursing staff. Computer systems can assist nurse managers in the preparation of rosters.

**Nursing management system**

18. The “patient assessment”, “care planning” and “staff rosters” functions are usually combined in a single nursing management system.

**Community contact**

19. A facility to exchange patient information with community, primary care and/or other sectors or agencies, for example a social services department, either by electronic mail or directly by means of a computerised communications network.

**Decision support**

20. Access to a system which can present either clinical or management information in a way that assists the process of decision-making or planning. Systems typically make strong use of graphical displays and allow a level of statistical analysis or “what if” modelling.

**Contracting**

21. A facility which enables the activities of a endoscopy unit to be monitored against its contracts and assists with the management of extra-contractual referrals.

**Non-clinical orders**

22. Electronically placing orders for non-clinical services, for example for repairs or supplies.

23. This function may also include the ability to enquire on the status of orders placed previously, for example “received”, “being processed” and “completed”.

# Appendix 5

## Numbers and areas of key spaces

### Introduction

1. A range of local factors significantly influence the numbers and/or areas of the key spaces in an endoscopy unit which are the subject of this appendix. In determining the requirements for a particular endoscopy unit, therefore, it is essential that project teams carefully examine the local factors.
2. The appendix is not a sizing methodology: it has been included in order to indicate assumptions made as part of the process of assessing the numbers and/or areas of the key spaces included in the Schedules of Accommodation (Chapter 7).
3. Project teams should challenge the assumptions by comparing them with local factors. The figure, and accompanying text, included as an annex to this appendix will help project teams to carry out this work.

### Main waiting area

4. The principal factor used in assessing the size of the main waiting area was the number of chairs that need to be accommodated.
5. In sizing the main waiting area, it was assumed that:
  - a. three patients per hour were treated in each endoscopy room;
  - b. patients had appointments at hourly intervals;
  - c. all patients were accompanied by one escort
6. On the basis of the assumptions noted in paragraph 5, the numbers of chairs required in main waiting areas in endoscopy units with one, two, three and four endoscopy rooms are shown below:
  - a. one endoscopy room - 6 chairs;
  - b. two endoscopy rooms - 12 chairs;
  - c. three endoscopy rooms - 18 chairs;
  - d. four endoscopy rooms - 24 chairs
7. It is considered that not all patients will be accompanied by an escort, thus creating some spare capacity.

### Patient preparation rooms

8. In determining the number of patient preparation rooms, it was assumed that the maximum period of time which it was essential for a patient to spend in a patient preparation room would be less than the minimum period of time spent in the endoscopy room. On this basis, one patient preparation room per endoscopy room would be adequate. A “spare” patient preparation room was added as a “cushion” to help meet demand in sessions where the time spent by a patient in the endoscopy room was less than the time a patient was required to spend in a patient preparation room. Pressure on the patient preparation rooms is relieved by provision of the sub-wait area.
9. On the basis of the assumptions noted in paragraph 8, the numbers of preparation rooms required in endoscopy units with one, two, three and four endoscopy rooms are shown below:
  - a. one endoscopy room - 2 preparation rooms;
  - b. two endoscopy rooms - 3 preparation rooms;
  - c. three endoscopy rooms - 4 preparation rooms;
  - d. four endoscopy rooms - 5 preparation rooms.

### Recovery areas

10. In determining the number of recovery positions, it has been assumed that:
  - a. three patients per endoscopy room per hour will need to be accommodated;
  - b. the average period of time spent by a patient in the recovery area will be two hours.
11. It has also been assumed that patients will spend:
  - a. about 80 minutes in the recovery stage 1 area;
  - b. about 40 minutes in the recovery stage 2 area.
12. On the basis of the assumptions noted in paragraphs 10 and 11, the numbers of recovery positions required in endoscopy units with one, two, three and four endoscopy rooms are shown below. The precisely calculated figure is shown in brackets: the number of positions for which space has been allowed in the Schedules of Accommodation (Chapter 7) is not in brackets and includes a small addition as a “cushion”:
  - a. one endoscopy room:
    - (i) total - 8 (6) positions;

- (ii) stage 1 - 5 (4) positions;
- (iii) stage 2 - 3 (2) positions;
- b. two endoscopy rooms:
  - (i) total - 14 (12) positions;
  - (ii) stage 1 - 9 (8) positions;
  - (iii) stage 2 - 5 (4) positions;
- c. three endoscopy rooms:
  - (i) total - 20 (18) positions;
  - (ii) stage 1 - 13 (12) positions;
  - (iii) stage 2 - 7 (6) positions;
- d. four endoscopy rooms:
  - (i) total - 26 (24) positions;
  - (ii) stage 1 - 17 (16) positions;
  - (iii) stage 2 - 9 (8) positions.

# Annex to Appendix 5

## Introduction

1. Figure 5 illustrates patient movement through a theoretical session in an endoscopy unit in relation to one endoscopy room. The figure is intended to represent a “worst case scenario”, with patients spending short periods of time in the endoscopy room and longer than average periods of time in the recovery area, thus creating a high demand for space in the main waiting area, patient preparation rooms and recovery areas.

## Key to figure and explanatory notes

### Arrival of staff

2. Staff arrive at 7.00 am.

### Arrival of patients

3. [⊕] represents the arrival of a patient.

4. A first group of three patients arrives at 7.30 am. Further patients arrive at 45-minute intervals.

5. A vertical line taken down the figure at the point where any one patient enters the endoscopy room (represented by [E]) shows that there are two or three other patients in the endoscopy unit either waiting, being received and registered, or preparing. This “reserve” of patients should ensure that the endoscopy room does not stand idle.

6. If patients arrived at 30-minute intervals, the “reserve” of patients would increase to four or five but the periods of time spent waiting by most patients would increase: for some patients the period would increase significantly.

### Reception and registration of patients

7. [R] represents a period of 15 minutes allowed for a patient to be received and registered.

8. Reception and registration includes entry of information on a computer, final preparation of health records and advising patient and escort of operational procedures.

9. Patients are received and registered in the sequence of their arrival.

### Waiting by patients

10. [■ ■ ■ ■] represents periods of time spent waiting by patients. A double line indicates that an escort is waiting with a patient.

11. A vertical line taken down the figure at 8.45 am shows that there are four people in the waiting area for this session with one endoscopy room.

### Patient preparation

12. [C] represents a period of ten minutes allowed for a patient to change into a procedure gown and for any “pre-med” preparation.

13. A patient called to a patient preparation room as the previous patient enters the endoscopy room will need to wait for a short time after the period of ten minutes allowed for preparation.

### Administration of sedation/local anaesthetic

14. [S] represents a period of six minutes allowed for administration of sedation/local anaesthetic.

15. Up to and including the administration of sedation/local anaesthetic, the periods of time required for activities are more or less the same for each patient.

### Procedure time

16. [P] represents the period of time allowed for an endoscopic procedure.

17. This period of time can vary significantly. The figure illustrates a session with relatively short periods of time for endoscopic procedures, with variations arising from, say, a biopsy carried out during the procedure.

18. The combination of the time required for the administration of sedation/local anaesthetic and for the endoscopic procedure provides an adequate period of time for the next patient to change - even in a session with relatively short periods of time for the procedures.

### Preparation of endoscopy room

19. [Q] represents a period of six minutes after a procedure to clean and clear the equipment and to prepare the endoscopy room for the next patient.

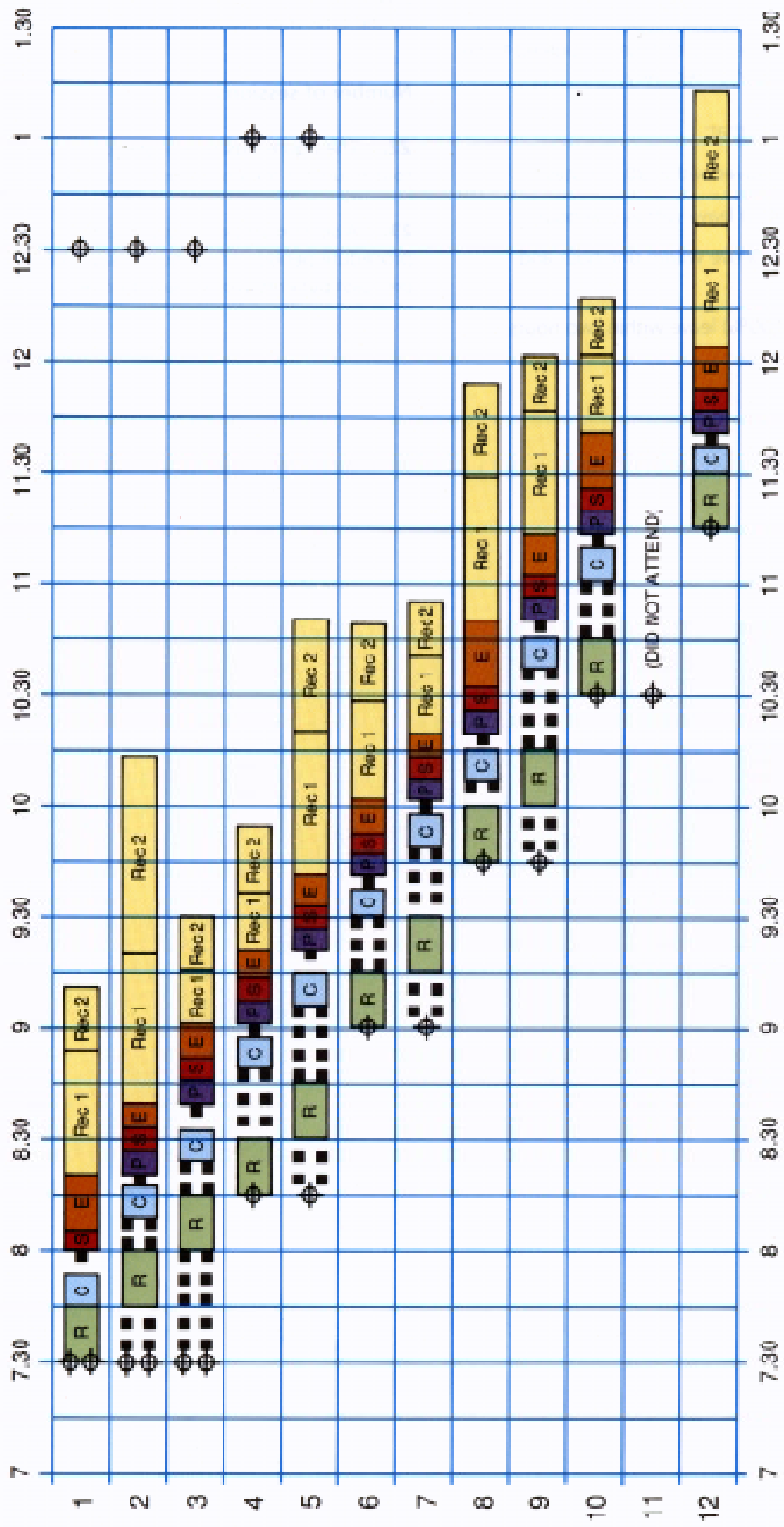


Figure 5 Patient movement chart for single endoscopy room clinic (4-hour) session

By holding a line vertically down this chart at any time, it is possible to assess exactly how many people are in each stage at that time. Examples are given in the text with the key (on the following page).

## Recovery

20. Rec 1 represents periods of time considered to be on the high side of average for recovery.

21. The figure illustrates that:

- a. one patient (9%) leaves within 30 minutes;
- b. seven patients (64%) leave within one hour;
- c. ten patients (91%) leave within one hour and 30 minutes;
- d. eleven patients (100%) leave within two hours.

It will be noted that recovery areas will be clear of patients by the time they are required for a later session.

## Number of sessions

22. The figure illustrates a session based on a period of four hours for the endoscopic procedures.

23. A second session could be arranged with a procedure period of four hours, say, from 1.00 to 5.00 pm. Last patients would leave between 6.00 and 6.30 pm.

# Appendix 6

## Ergonomic studies

### Figures 6 and 7

1. Figures 6 and 7 include three from a series of concept drawings prepared by KeyMed (Medical and Industrial Equipment) Ltd following a study of endoscopy facilities in 41 hospitals and clinics in France, Germany, Japan, the United Kingdom and the United States of America. Preparation of the drawings followed analysis of the information collected on the study tour. Key factors included:

- activities which take place in connection with endoscopic procedures;
- positions of people, equipment and instruments;
- movement of people, equipment and instruments.

2. Figure 6 illustrates optimum positions of the patient, staff, equipment and instruments during upper and lower gastrointestinal endoscopic procedures.

3. Figure 7 applies principles established by Figure 6 and shows a basic layout for an endoscopy room and the locational relationship of the endoscope cleaning room and store.

### Figures 8 to 11

4. Figures 8 to 11 are ergonomic drawings which take account of the basic layout shown in Figure 7 and illustrate a range of situations in an endoscopy room.

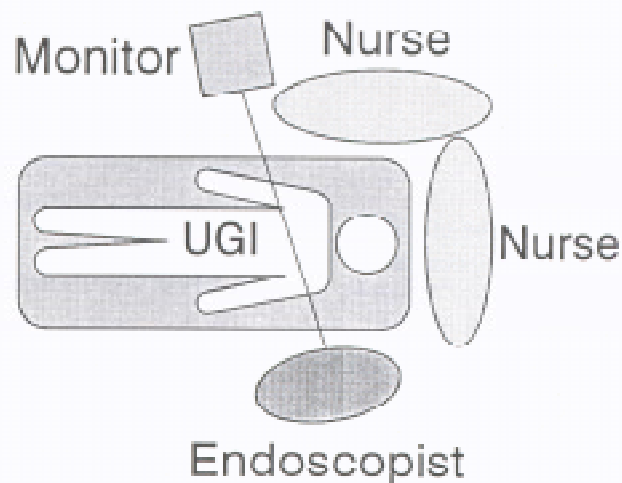
5. The endoscopy room on each figure is the same size and has identical fixtures and fittings. The variations between the figures relate to:

- a. the position of staff (reflecting the type of procedure);
- b. the position of mobile equipment;
- c. the type of endoscopy trolley. Figures 8 and 10 show separate endoscopy and accessories trolleys. Figures 9 and 11 show an endoscopy trolley which also accommodates accessories.

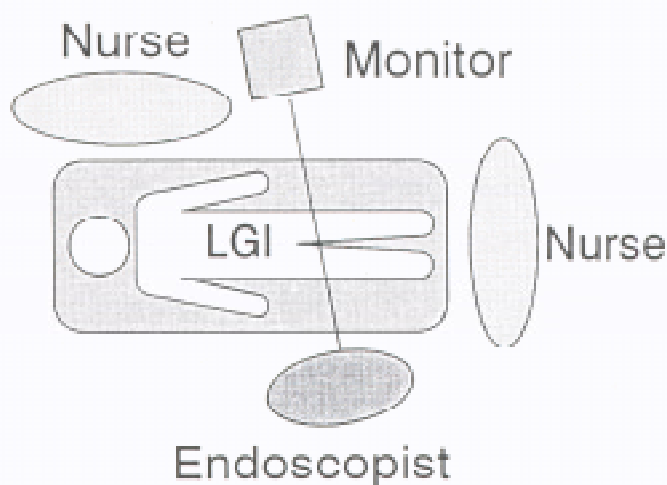
6. The figures indicate the relationship of the endoscopy room to the alternative types of endoscope cleaning room and store shown in Figures 12 and 13.

### Figures 12 and 13

7. Figures 12 and 13 are ergonomic drawings which illustrate alternative layouts of an endoscope cleaning room and store, one with access from the short wall of two endoscopy rooms and the other with access from the long wall of two endoscopy rooms. Both layouts include the same fixtures, fittings and equipment.



Upper gastrointestinal endoscopy position



Lower gastrointestinal endoscopy position

Figure 6 Endoscopic procedures – patient, staff and equipment positions

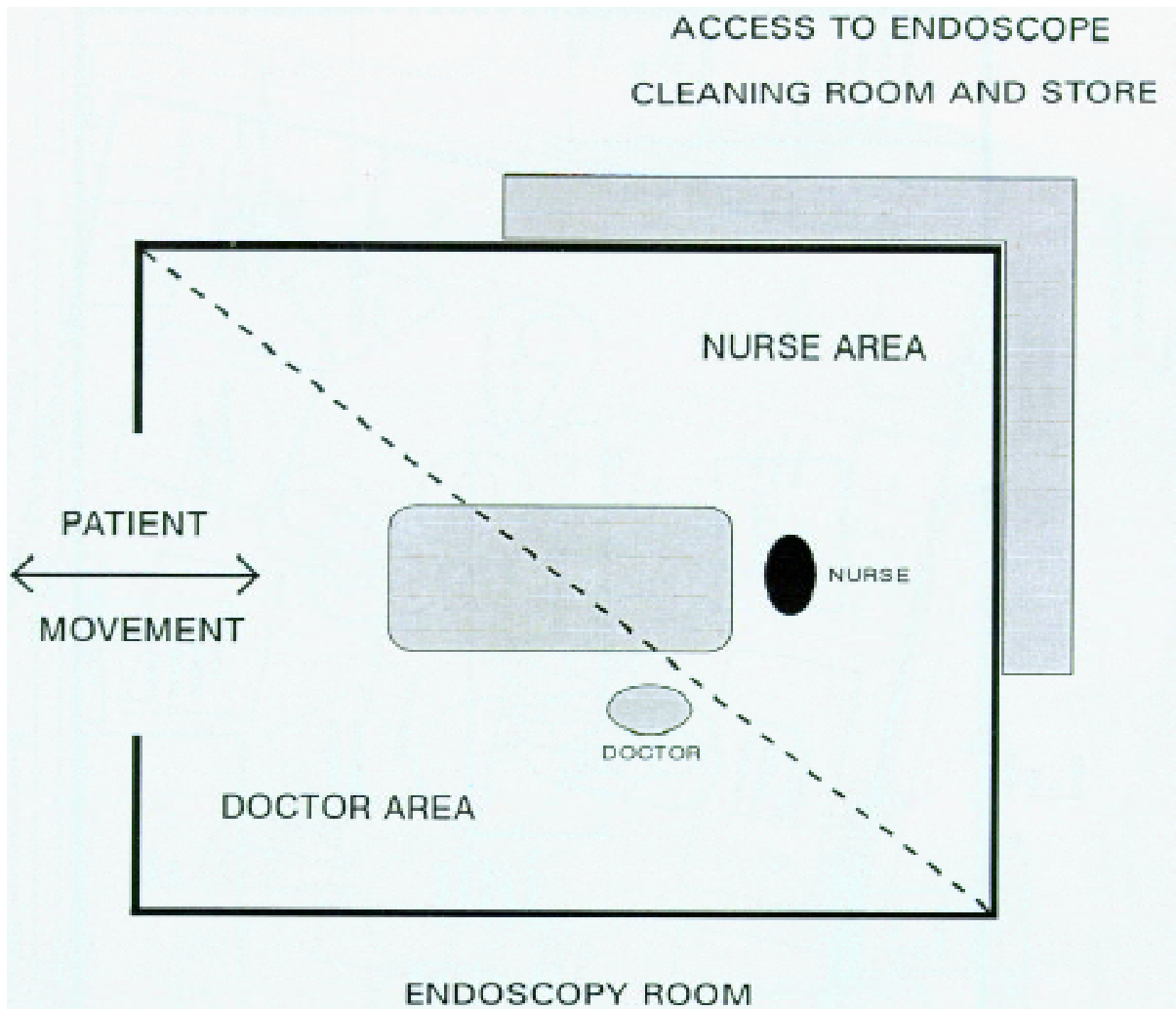


Figure 7 Endoscopic procedures – patient, staff and equipment positions

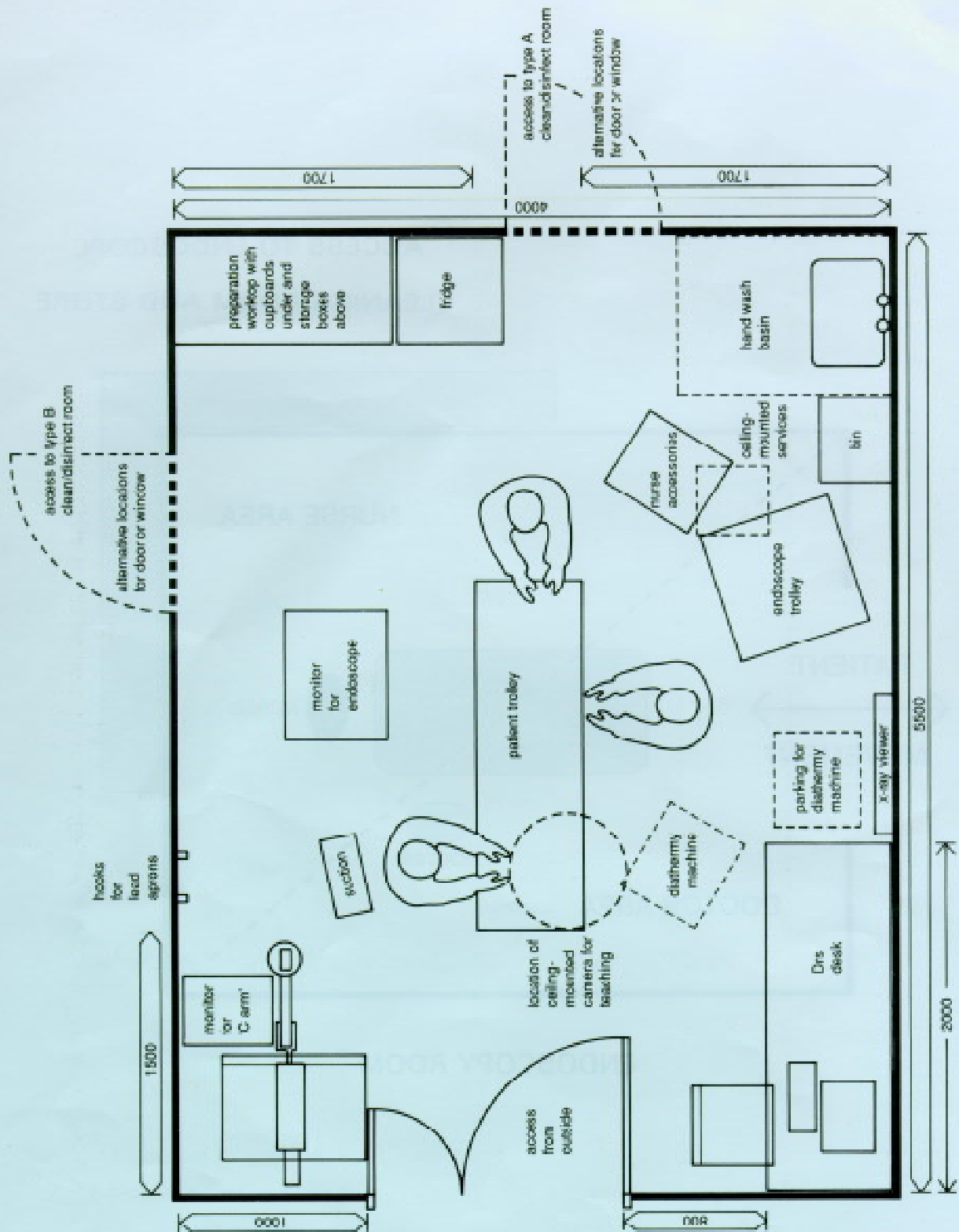


Figure 8 Lower gastrointestinal endoscopy position, with separate endoscope and accessories trolleys

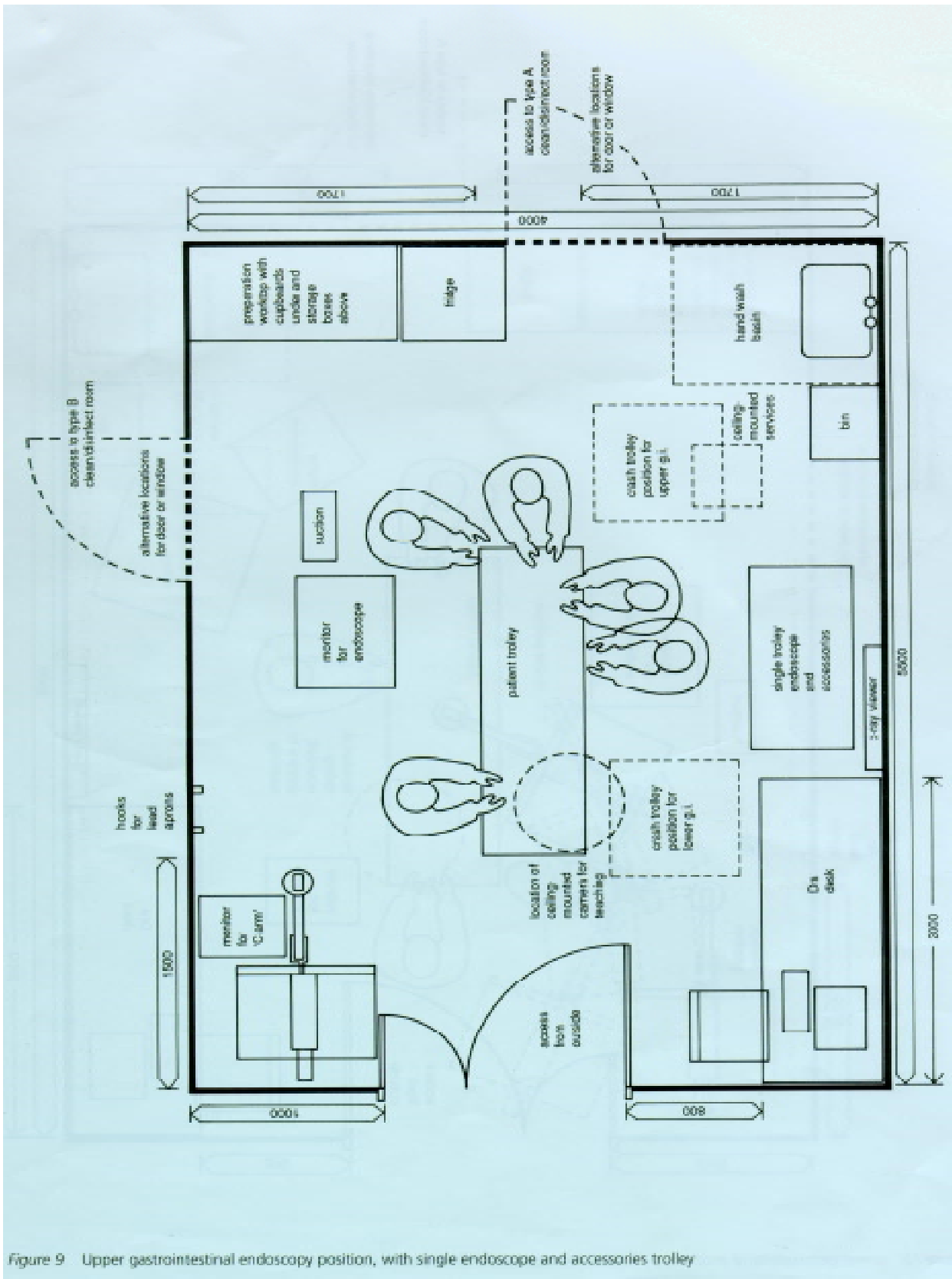


Figure 9 Upper gastrointestinal endoscopy position, with single endoscope and accessories trolley

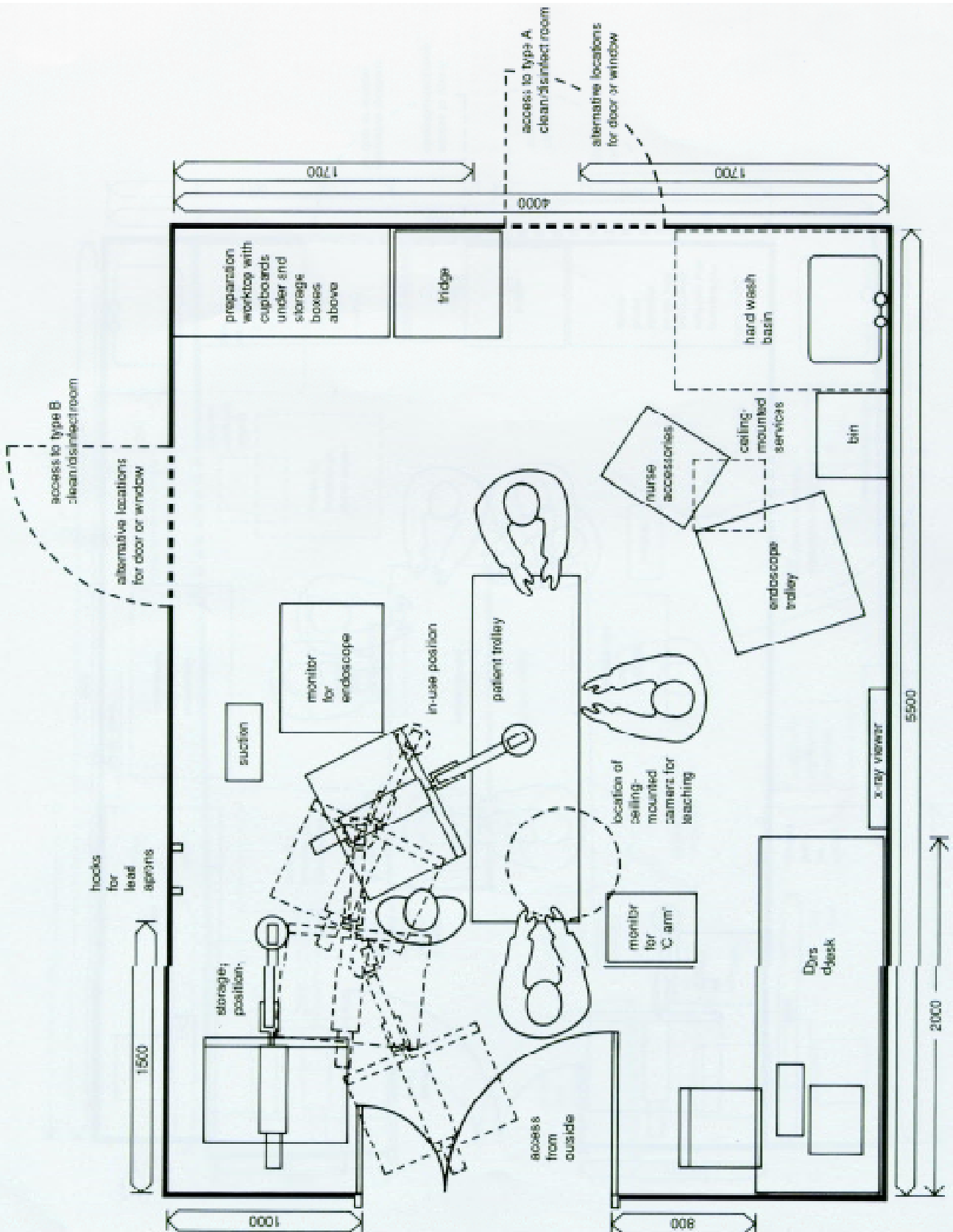


Figure 10 Lower gastrointestinal endoscopy position, with separate endoscope and accessories trolleys, and with C-arm in use

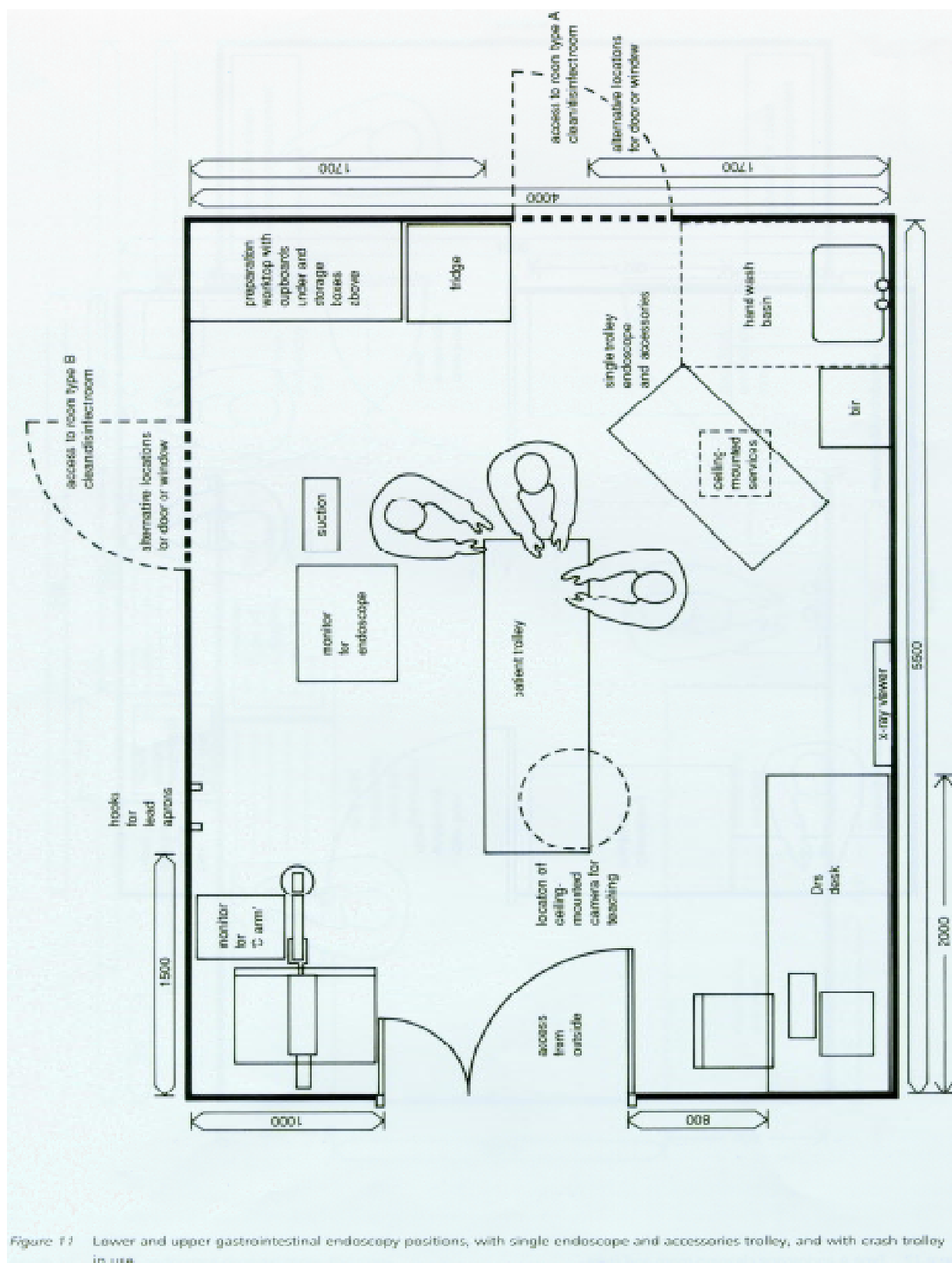


Figure 11 Lower and upper gastrointestinal endoscopy positions, with single endoscope and accessories trolley, and with crash trolley in use

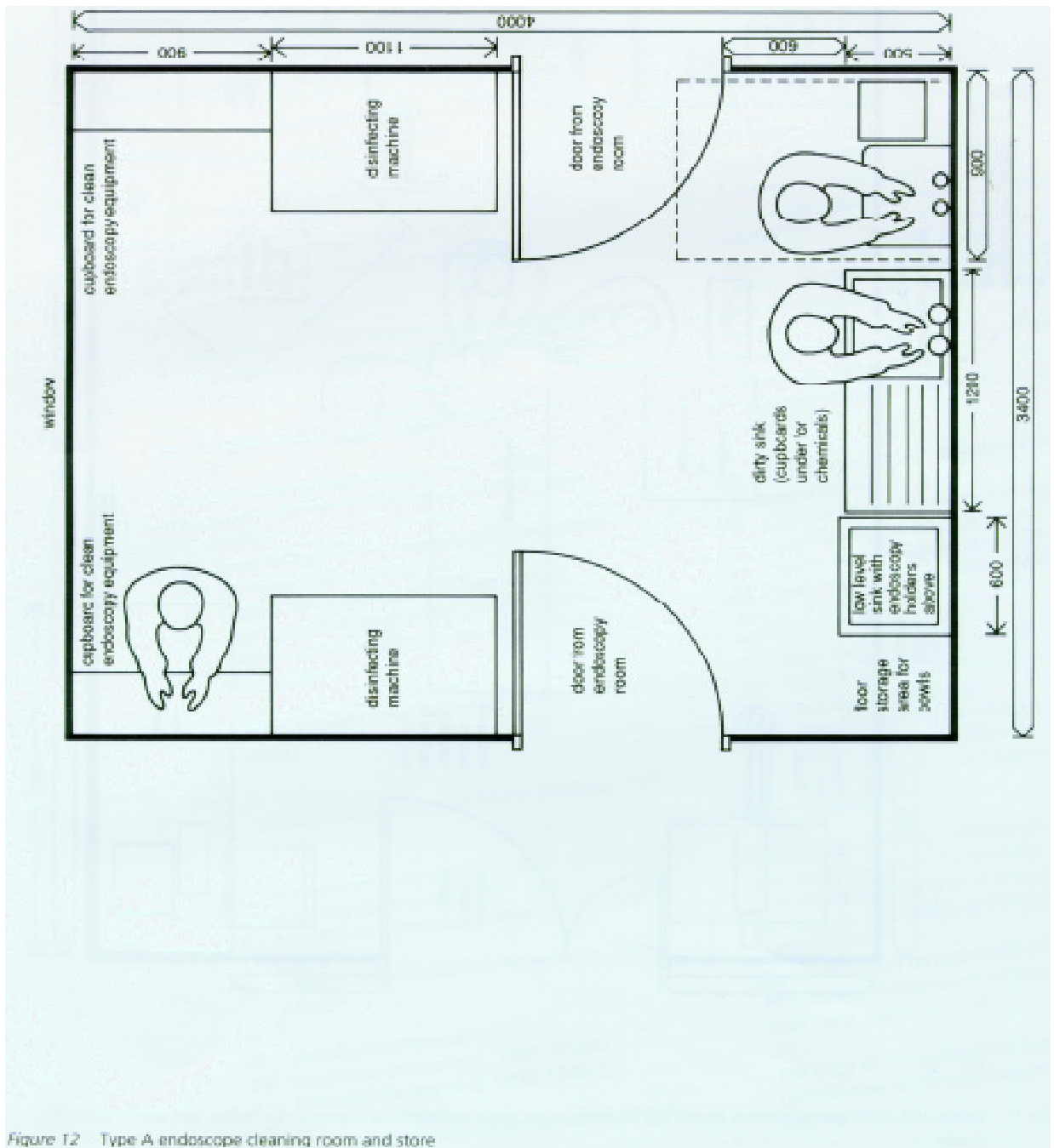


Figure 12 Type A endoscope cleaning room and store

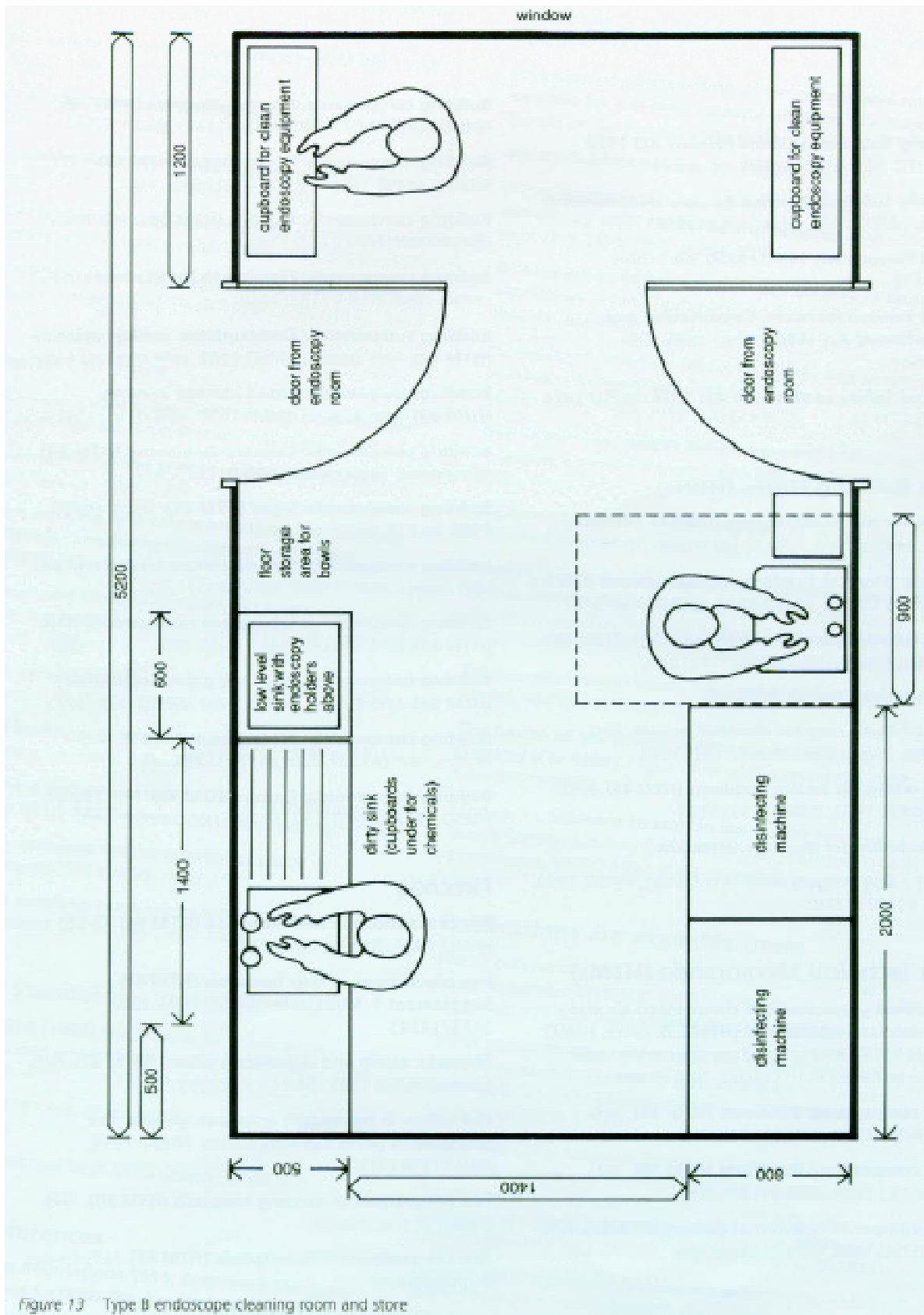


Figure 13 Type B endoscope cleaning room and store

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