

Provision of postoperative care in UK hospitals

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Surveys have been undertaken of the clinical dependency of surgical patients in eight United Kingdom acute general hospitals. The findings indicate that patients' needs are not always matched by appropriate levels of clinical care. In particular, it appears that a significant number of surgical patients need high-dependency care. Currently most of these patients are admitted to ITU beds, or are at risk on surgical wards.

All surgical patients need postoperative care. Apart from those having very minor procedures, this is initially provided in recovery wards. Subsequently, care is given according to clinical dependency. The majority who are reasonably fit, and whose surgery has been straightforward, can be returned safely to a surgical ward. A small number who have actual or impending organ failure will need admission to an Intensive Therapy Unit (ITU). However, a significant proportion, including those with pre-existing illness, or those undergoing major procedures who remain clinically unstable, may need admission to a High-dependency Unit (HDU). Here, continuous monitoring can be undertaken, and appropriately trained nurses are constantly present. Encouraged by our own experience of the valuable contribution of a high-dependency unit in the care of such patients, we have sought to investigate the general provision of appropriate postoperative care in other acute general hospitals.

To this end, two surveys have been undertaken. The first survey, involving four hospitals, provided data clearly indicating that a certain proportion of surgical patients were inappropriately placed in relation to their needs. As a consequence, a second larger survey was commissioned in order to test the findings of the first survey. The second survey was carried out for a longer

period and again involved four hospitals. The findings in both surveys were essentially similar.

Methodology

The aim of each survey was to identify how many patients in acute surgical beds were appropriately placed and how many would be better placed in units providing different levels of care. The following levels of clinical dependency were agreed:

1. *Intensive care*

An area in which patients are admitted for treatment of actual or impending organ failure, and when mechanical ventilation may be required. The nurse-to-patient ratio is approximately 6.5:1.

2. *High-dependency care*

An area where patients are continuously monitored, and appropriately trained nurses are constantly present. The nurse-to-patient ratio should be approximately 2.5:1. Patients needing mechanical ventilation are not normally managed in this area.

3. *Ward care*

An area where patients have intermittent clinical observations and receive therapeutic interventions more than twice daily by appropriately trained nurses. The nurse-to-patient ratio will vary considerably according to the activity and specialty of the ward concerned.

4. *Convalescent or hotel care*

An area for patients who are recovering from illness or operation, who are clinically stable and self-caring and who no longer need clinical observations or interventions beyond those which can be provided by domiciliary support or visiting an outpatient clinic.

5. *Long-stay unit*

A unit for the care of the long-term disabled who are clinically stable but who cannot be cared for at

home, either permanently or temporarily, because of insufficient resources or support.

The hospitals involved in the first study were St Thomas' Hospital, the Salford Group of Hospitals, Leicester Royal Infirmary and the University Hospital of Wales (UHW) (see Appendix). The surveys were carried out on two days, 14 and 16 January 1992.

With the exception of one hospital, the second survey was carried out over a longer period, ie two consecutive weeks but avoiding public holidays. Four hospitals were chosen, viz one teaching hospital and three district general hospitals. These were King's College Hospital, London, Frimley Park, Wrexham Maelor Hospital and North Tees General Hospital (see Appendix). A census approach was used to determine the number of patients appropriately placed. On the relevant study days a 'Snapshot' was taken of patients on the surgical wards. Information was collected on the five categories of patient dependency together with:

- (a) Surgical specialty.
- (b) The time and date of the 'Snapshot'.
- (c) Any comments that the observers might wish to make.

In addition, 'Snapshots' were taken of patients occupying ITU beds. The surveys were carried out with the collaboration of medical and senior nursing staff. Those carrying out the study found little difficulty in deciding appropriate categories for the patients and interobserver reliability was high.

Results

In the surgical wards of the hospitals surveyed, a total of 7945 'Snapshot' assessments of patient dependency was made (Table I).

In all hospitals, patients requiring intensive care were appropriately treated and none were nursed on the surgical wards. Nevertheless, many of the observers indicated that there were periods when they were unable to place their patients in ITUs owing to lack of beds, and *ad hoc* arrangements had to be made for their care.

The average requirement for HDU facilities was 6.8% (Table I). The range, however, was quite wide (0.5–13.5%; Fig. 1). The figure of 0.5% is from the University

Table I. 'Snapshot' surveys surgical wards*

Clinical dependency	Bed-days	%
Intensive care	0	0
High-dependency care	543	6.8
Ward care	5306	66.8
Convalescent care	1777	22.4
Long-stay	319	4.0
Total	7945	100

* Eight hospitals

Hospital of Wales, which has a dedicated HDU and the low percentage reflects this. The figure of 13.5% refers to Frimley Park.

Of patients on the surgical wards, 66.8% were appropriately placed (Table I). The range was wide (58.8–95%; Fig. 1), and this may be explained by other factors such as variable requirements for hotel and long-stay units.

The hotel requirement was quite high, viz 22.4% (Table I), but again the range was wide (3.3% at St Thomas' Hospital to 33.5% at the Maelor Hospital, Wrexham; Fig. 1). The wide range for convalescent or hotel facilities may have been due to the difficulty experienced by some observers with the definition of 'Hotel care'.

The need for long-stay units was low, ie only 4% of patients on the surgical wards (Table I). The requirement for this facility ranged from 1.1% to 10.6% (Fig. 1). The latter figure was obtained from the Leicester data and is probably related to a large orthopaedic practice, 120 of 471 beds being assigned to trauma and orthopaedics.

Intensive care unit data was provided by six of the eight hospitals surveyed, the exceptions being UHW and St Thomas' Hospital. More than 50% of patients were inappropriately placed with respect to high-dependency care (Table II). The pattern is similar both for the more detailed studies carried out in King's and Wrexham (49.6%) and the studies at the other four hospitals (55%).

In the Wrexham study, the requirement of individual specialties for high-dependency care was reviewed. It was high for orthopaedics (11.1%), intermediate for general surgery (6.5%) and low for gynaecology (2.3%), but highest for the ITU (54%) (Table III).

Table II. 'Snapshot' surveys ITUs*

Clinical dependency	Bed-days	%
Intensive care	67	47.8
High-dependency care	71	50.8
Ward care	2	1.4
Convalescent care	0	0
Long-stay	0	0
Total	140	100

* Six hospitals

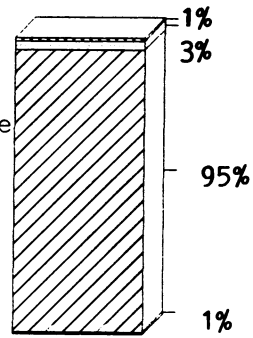
Table III. 'Snapshot' survey* of high-dependency requirements

Gynaecology	2.3%
General surgery	6.5%
Orthopaedics	11.6%
Intensive care	54%

* Wrexham Maelor Hospital

**CLINICAL
DEPENDENCY**

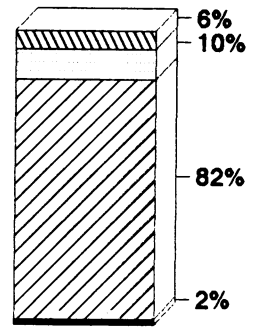
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- ▨ 3 Ward Care
- 4 Convalescent Care
- ▩ 5 Long Stay Care



BED DAYS

100

NORTH TEES

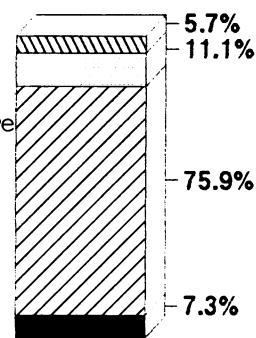


275

ST THOMAS'

**CLINICAL
DEPENDENCY**

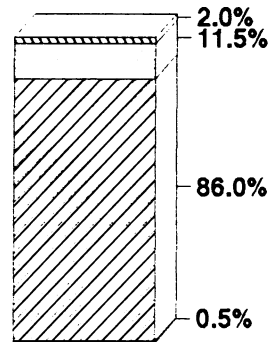
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- ▨ 3 Ward Care
- 4 Convalescent Care
- ▩ 5 Long Stay Care



BED DAYS

424

MANCHESTER

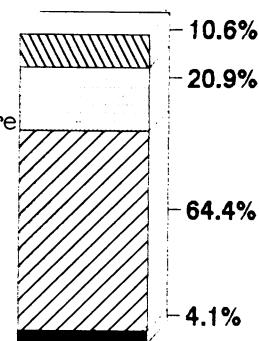


585

CARDIFF

**CLINICAL
DEPENDENCY**

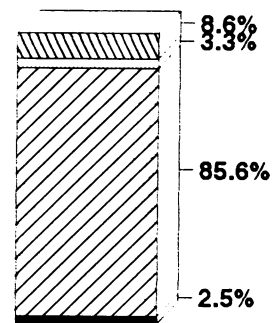
- 2 High Dependency Care
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- 4 Convalescent Care
- ▩ 5 Long Stay Care



BED DAYS

841

LEICESTER

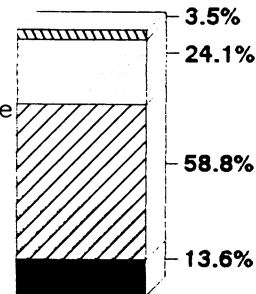


1054

KING'S

**CLINICAL
DEPENDENCY**

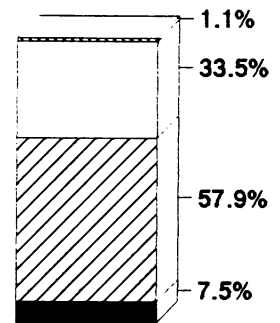
- 2 High Dependency Care
- ▨ 3 Ward Care
- 4 Convalescent Care
- ▩ 5 Long Stay Care



BED DAYS

1543

FRIMLEY PARK



3128

WREXHAM

Figure 1. Range of requirements for an HDU.

Discussion

The data clearly indicate the need for purpose-equipped and staffed HDUs (Table I). It is a small percentage, which in this study only applied to 6.8% of the surgical population. The safety of these patients is compromised if they are managed without extra provision of resources on surgical wards. Hospitals that do not have HDU facilities place many of their patients requiring high-dependency care in an ITU (Table II) where their safety is assured but which entails the inappropriate use of an expensive resource.

This accords with international studies. Wagner *et al.* (1), in a survey of five hospitals, found that between 15% and 40% of ITU patients could safely be managed in an HDU. Also, Nelson (2) and Byrick *et al.* (3) found that approximately 35% of ITU patients could be more appropriately cared for in an HDU. The data obtained from Wrexham shows that the need for HDU facilities was low for gynaecology and greatest for orthopaedics, general surgery and vascular surgery (Table III). This latter finding obtains support from the data and experience of the HDU in Cardiff, which was established to receive high-dependency patients from the hospital population, mainly surgical. Here, over 70% of patients had undergone either major vascular or gastrointestinal surgery (4).

The percentage of patients considered suitable for a Hotel Unit varied from 33.5% (Wrexham) to 3.3% (King's College Hospital). None of the observers found difficulty in placing the patients in the appropriate category, with the exception of those from King's College Hospital, who considered that a redefinition of the Hotel category may be needed. In the USA, many hospitals have introduced Hotel and Recovery centres, the latter differing from the former in that a low level of nursing care is provided.

Conclusions

The data, from these 'Snapshot' assessments carried out in eight hospitals, support the view that patients' needs are not always matched by the appropriate level of clinical care.

The number of HDUs is insufficient, with the result that patients are being managed in ITUs at extravagant expense, or on surgical wards where the level of care is often insufficient. The figures show considerable variation between hospitals. This suggests that the requirements in any individual hospital depend on case mix, and can therefore only be sensibly estimated by individual surveys. The data also support the general belief that there is a need for more convalescent care.

Our thanks are due to the nurses and medical staff of all those hospitals who co-operated in this study and who took much time and trouble in the collection of data (see Appendix).

This study was undertaken during the course of discussions by a multidisciplinary working party on 'Graduated Patient

Care'. Membership of the working party has included representatives of The Royal College of Surgeons of England, Royal College of Anaesthetics, and Royal College of Nursing. Chairman: Professor M Rosen. Members: Mr D L Crosby, Professor Charles Galasko, Mr Barry Jackson, Ms Christine Price, Dr G A D Rees, Mr John Rennie, Professor Alistair Spence, Professor Graham Smith, Ms Jean Thomas.

References

- 1 Wagner DP *et al.* Identification of low-risk monitor patients within a medical-surgical intensive care unit. *Med Care* 1983; **21**: 425-34.
- 2 Nelson JB. The role of an intensive care unit in a community hospital. A ten-year review. *Arch Surg* 1985; **120**: 1233-6.
- 3 Byrick RJ, Power JD, Ycas JO, Brown KA. Impact of an intermediate care area on ICU utilisation after cardiac surgery. *Crit Care Med* 1986; **14**: 869-72.
- 4 Crosby DL, Rees GAD, Gill J. The role of the high dependency unit in postoperative care: an update. *Ann R Coll Surg Engl* 1990; **72**: 309-12.

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APPENDIX

The following Acute General Hospitals contributed to these surveys:

Manchester

Salford Royal Infirmary and Hope Hospital is a large hospital group with over 700 beds, 240 of which are surgical and orthopaedic. The hospital does not have a dedicated HDU. The survey included all surgical patients with the exception of gynaecology and was carried out on 14 and 16 January 1992.

Leicester

Leicester Royal Infirmary is a large teaching hospital with over 800 beds. There are 471 surgical beds which are allocated to general surgery, gynaecology, otolaryngology, including oral and plastic surgery, trauma, and orthopaedics. The study was carried out on 14 and 16 January 1992.

Cardiff

The University Hospital of Wales has 830 beds. A preliminary survey of 180 surgical beds was carried out on 14 and 16 January, followed by additional surveys on 21 January, 3 and 15 February 1992, ie more than the 2 days requested. All surgical specialties were examined with the exception of cardiothoracic and neurosurgery. The hospital does not have an accident and emergency unit or orthopaedic beds.

St Thomas' Hospital

St Thomas' Hospital has a total of 800 beds and all surgical specialties were studied with the exception of paediatrics and obstetrics. At St Thomas' hospital, it was not possible to carry out the survey on 14 and 16 January and the data collected was for one day, viz 15 January 1992.

King's College Hospital

Seven surgical wards with a total complement of 131 beds, including general, vascular, hepatobiliary, urological, ophthalmic and oral surgery, were surveyed. Surveys were also taken of the emergency admission ward and two ITUs, one at King's and the other in Dulwich. The surveys were undertaken from 31 March to 10 April 1993.

Wrexham

Wrexham Maelor Hospital is a district general hospital with 630 beds. The survey was carried out between 21

March and 3 April 1992. The surgical bed complement is 290 and the specialties considered were general surgery, urology, orthopaedics, gynaecology, otolaryngology and ophthalmic surgery.

Frimley Park

Frimley Park is smaller relative to the other hospitals surveyed, having a total of less than 600 beds. The survey of 230 surgical beds undertaken was for 2 weeks in 1992 and included all surgical specialties.

North Tees

North Tees General Hospital is a district general hospital with 651 beds. The survey was carried out on 2 days, 13 and 24 April 1992. The survey included 166 surgical beds covering all surgical specialties.