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PATIENT – NURSE DEPENDENCY

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KING'S FUND PROJECT PAPER

MEASUREMENT OF PATIENT-NURSE DEPENDENCY

AND WORK LOAD INDEX

An explanatory booklet
demonstrating two practical applications of patient-nurse dependency classification
in controlling workload for wards and nursing units

prepared by

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for a King's Fund/DHSS Working Party

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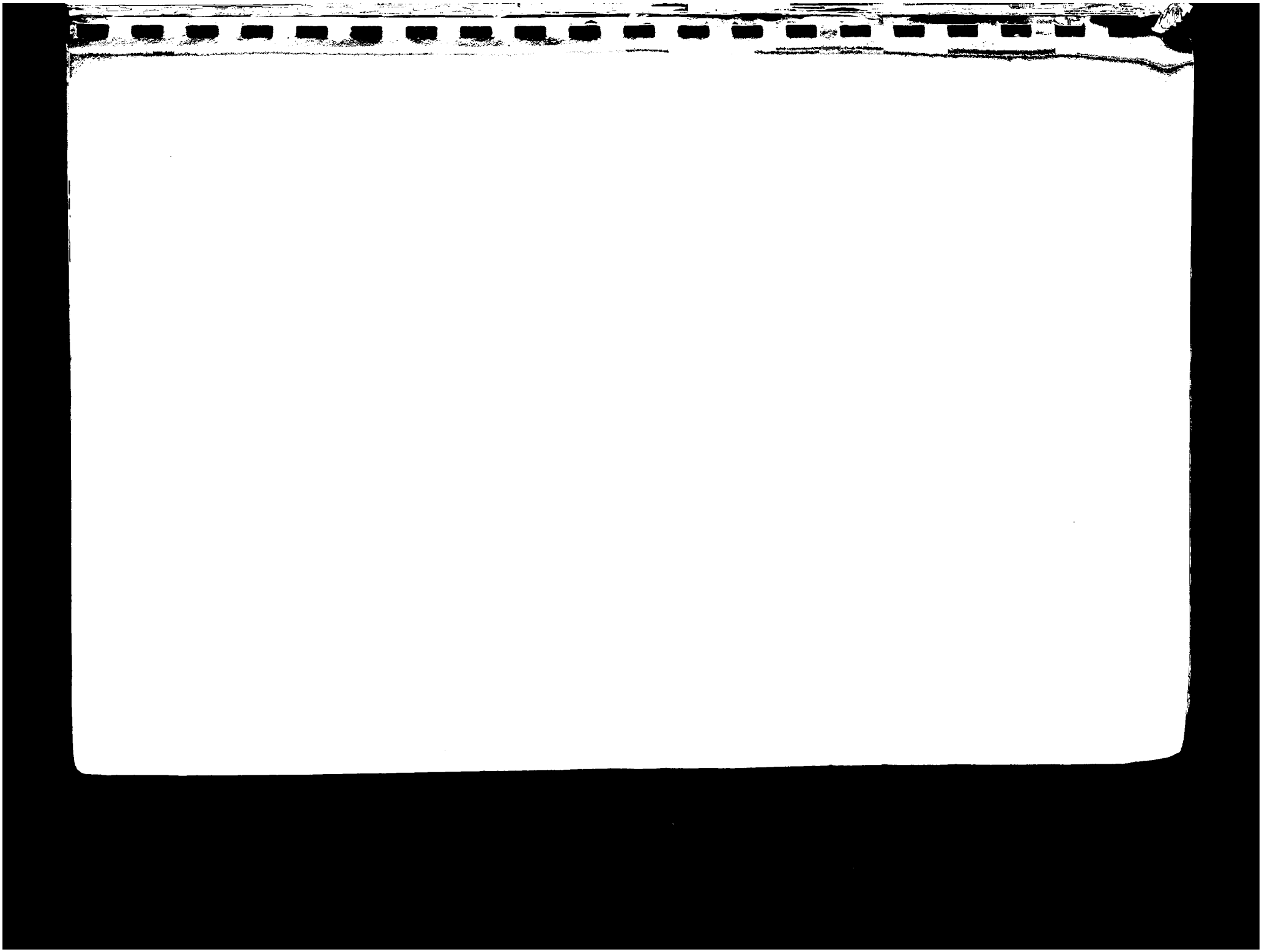

FOREWORD

During the course of a two-day conference on patient-nurse dependency held at the King's Fund Centre in January 1972, the need emerged for a careful consideration of the wide range of approaches found to be in use, and some guidance to nurses, management, and research workers on the most fruitful next step in this field of activity. Accordingly, a Working Party was set up.

One of its conclusions, following a detailed study of published work, was that a simple (do-it-yourself) guide should be prepared for nurses, sisters and nurse managers. To this end an additional nurse, Dr Bernadette Mulligan, was co-opted to the Working Party. This booklet which was prepared by her in conjunction with the Working Party and discussed at a King's Fund Centre conference is the result. It describes briefly the background work leading to the creation of dependency systems and looks at their various uses including the derivation of work load measures. It then shows in detail how to use two simple methods to collect the necessary dependency information and how to calculate the work load index.

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DEFINITION AND USES OF THE CONCEPT OF PATIENT-NURSE DEPENDENCY

A healthy individual to a large extent enjoys independence from the services offered by members of the health professions although it is true that good health is maintained in part by preventive services of general health education, specific advice and various forms of immunotherapy. It is however when good health is impared by illness that independence is eroded and replaced in part by some degree of dependency. If the illness is sufficiently severe or complex, particularly if it leads to admission to hospital, support of the patient in this state of dependency and the restoration of independence where possible, are largely but not entirely the responsibility of the nurse. Patient-dependency in its broadest sense relates to the total care it is intended that patients should receive. In this booklet it is the dependency of the patient on the nurse which is being explored. The aim of patient-nurse dependency systems is to group patients according to common characteristics which are associated with the type of nursing care it is intended they should receive.

The classification of patients in this way can serve several purposes. Four such purposes are:

i an aid for hospital planning
ii organising progressive patient care
iii monitoring patient progress
iv measuring the work load

i An aid for hospital planning The concept of patient-nurse dependency provides an aid to planners who, whilst stressing the importance of flexibility in space allocation, still find it useful to have an indication of the proportion of patients who are likely to need low, intermediate or high care facilities.

ii Organising progressive patient care The classification of patients into a small number of care groups (that is, from 2-5 but usually 3) provides a simple aid:

a) to improving the use of hospital buildings and facilities by determining the most appropriate location for each patient.

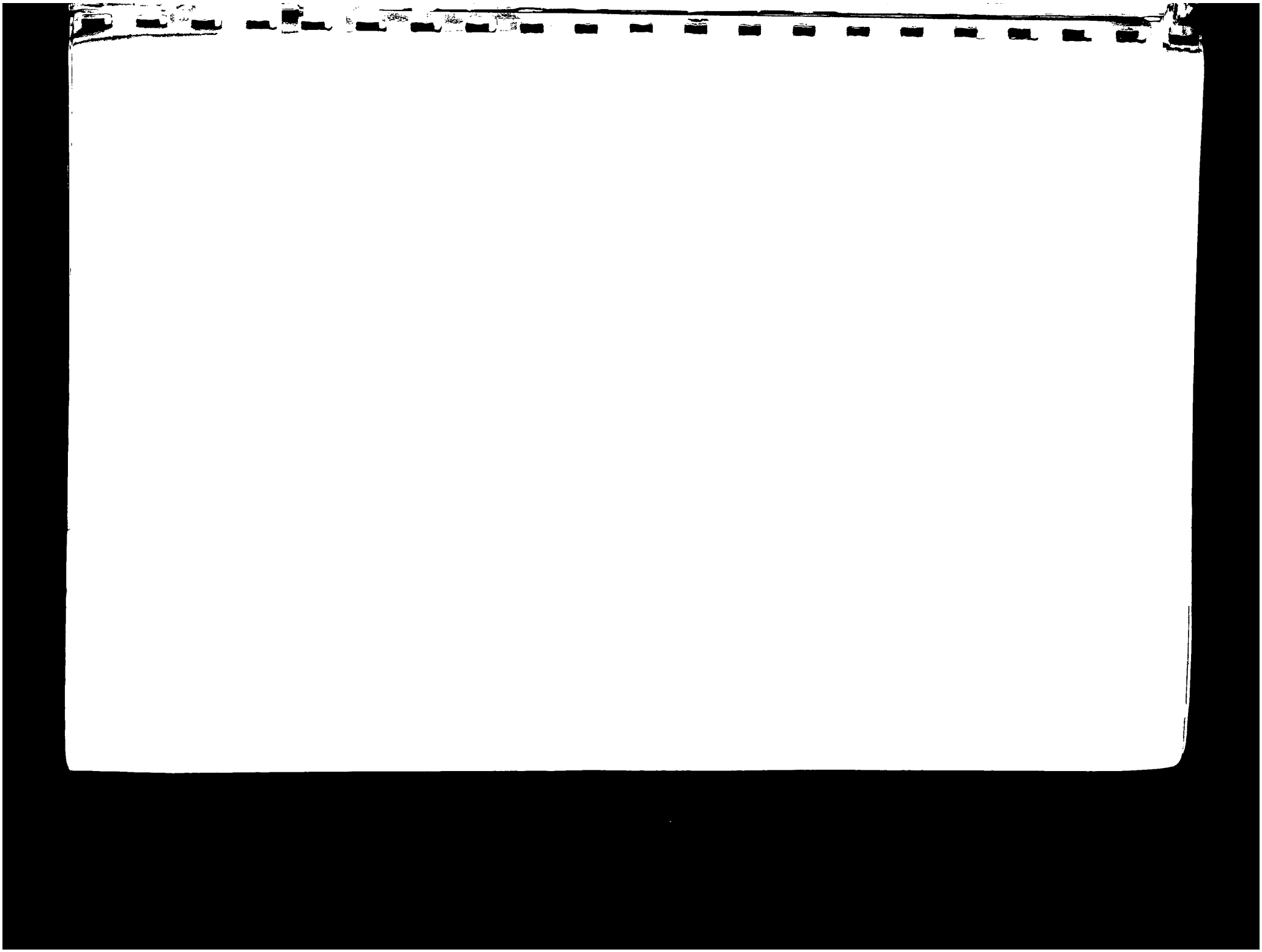
b) to improving the allocation of nursing skills, permitting concentration of nurses and equipment according to the type of care considered appropriate for each patient.

iii Monitoring of patient progress If maintained on an individual basis, as in the Dundee recording system described in Section 7 (page 40), the care groups can provide a means of monitoring patient progress. This information may highlight patients' needs in terms of treatment facilities or decisions. If used over a period of time, expected patterns of progress (known as dependency chains) for particular types of illness will be identified. The information can also be used experimentally as one indicator of patient progress, for example, under different care regimes.

iv Measuring work load Sisters and other senior nursing staff need to be able to quantify the work load in their wards and units in order to deploy their limited supply of nurses according to the variation in the volume of work to be done. Work load is determined by timing nursing activities. Patients are classified in dependency groups related to the time taken in giving them care.

For purposes i) to iii) the users will in general tend to be different categories of staff. For example although all are the concern of nurses, i) will provide information to planners, ii) to hospital administrators and medical staff, and iii) to nursing/medical clinical teams. For these three purposes, both the actual care groups (low intermediate, high) and the criteria for allocating patients into the appropriate group are determined by the information required by the various users. Thus all that is required is that the criteria for classification are made explicit and that, if comparisons are intended, the same criteria are adhered to in all the wards or hospitals involved. There is no need to time nursing activities. A simple count after patients have been classified will provide the relevant numerical information. These three purposes are therefore not discussed any further in this booklet. They are included for completeness only, to avoid the confusion which can arise if their exclusion from the discussion is not made clear at the outset.

It is in the fourth use, namely, measuring the work load that timing of nursing activities enters into the picture. The calculation of work load and the use of the resultant measures still present problems but these are discussed in the appropriate sections of the booklet. Section 2 reviews the development of work load measures and may be superfluous reading for those already acquainted with the history and philosophy of dependency studies. Such readers are advised to pass immediately to Section 3. For the majority of nurses, however, Section 2 provides a sketch of the overall framework of dependency research which has been painstakingly constructed by many researchers over a number of years (see list of references) and of which the remainder of this booklet is but a part. It is stressed that some of the approaches in Section 2 are both complex and in varying stages of development. Complete understanding of these methods is not possible from such a brief review and is not necessary for following the relatively simple method which is explained from Section 3 onwards.



DEVELOPMENT OF PATIENT-NURSE DEPENDENCY SYSTEMS, MEASUREMENT OF NURSING ACTIVITY AND THE CONCEPT OF THE WORK LOAD INDEX

Observations of the components of patient-nurse dependency show that this dependency varies widely, and makes correspondingly varying demands on the nurses' time. Not surprisingly then, there has been an increasing number of research studies which have attempted to describe and measure this variation in patient-nurse dependency; the results have been widely used and misused. In an article by Barr, Moore, and Rhys Hearn (1), the entire range of studies to date is reviewed in considerable detail. This section presents a digest of the article to provide for the uninitiated an outline of the research relating to the concept of work load measurement.

The first known attempt to spell out well-defined criteria of dependency was produced in 1953 by a team at New York University (2). This study amounted to little more than a project undertaken by students in the department of nursing. Patients were categorised according to certain rules relating to the severity of their illness and continuous time studies were then performed on the amount of nursing care received by a small sample of patients in each category. This revealed that those patients designated as 'acutely ill' received an average of 184 minutes over a 24 hour period; those designated as 'moderately ill' an average of 99 minutes whilst the 'mildly ill' received 23 minutes. The seriousness of the patient's condition was also reflected in the fact that 64 per cent of the care provided for the 'acutely ill' patient was contributed by professional nursing personnel, the corresponding figures for the other two categories being 46 per cent and 34 per cent respectively.

Subsequent research has attempted to improve the classifications by focusing on particular characteristics of the patient, for example, whether or not he can bathe himself, or is incontinent. The first such scheme adopting this question and response approach was devised by Goddard (3) and was again based upon a considerable amount of observed activity in a representative sample of hospitals. These studies involved extensive measurements of how nursing staff occupied their time in relation to particular patients. It became clear that certain patients received considerably

more nursing time than others and Goddard reasoned that this reflected their relative dependencies. He expanded the original three classifications to five groups focusing almost exclusively upon the patient's ability to perform for himself the normal functions of daily living. A further category was also introduced to cover immediate post-operative patients. From time studies it was possible to determine just how much nursing care was provided on average to the patients in each of these six groups, although it was found that not all of the nursing activities could, in fact, be allocated to individual patients. Some, although described as nursing care, were not directly concerned with individual patients but with, for example, preparatory work associated with nursing procedures, or with collective activities for numbers of patients.

In addition, although the quantity of basic nursing was associated with the group to which a patient was allotted, there was no apparent association between this and the amount of technical nursing consumed. A scheme designed around Goddard's, but which does make allowance for technical nursing, was evolved by the Scottish Home and Health Department (4) and again, the definitions by which patients were allotted to groups were changed.

In two subsequent studies, one in the USA (5,6) and one in the UK, patients were categorised according to a combination of technical and basic nursing requirements. The first, which was evolved at Johns Hopkins Hospital, Baltimore, used rules for care grouping which had been found to be useful elsewhere in studies concerned with the introduction of progressive patient care. A large number of patients were classified into the three care groups designated self care, partial care and intensive care, and for the same patient population the amount of nursing care received was determined using work measurement recording techniques. Subsequent analysis of this data revealed that the quantity of technical and basic nursing received by patients in the three care groups was in the ratio of 1:2:5.

A similar study was undertaken in the Oxford Region by Barr using dependency groupings which were originally designed in association with Jeffrey (7). Again the amount of basic and technical nursing care received by categorised patients

was measured by continuous observation which revealed that the average self-care patient received 38 minutes of nursing between 8.00 am and 8.00 pm whilst that received by the typical medium care and intensive care patients was 86 and 185 respectively. These figures again approximate to a ratio of 1:2:5 and confidence in their validity has been strengthened by independent studies conducted by the Department of Health and Social Security and the North East Metropolitan Regional Hospital Board (8).

These two confirmatory studies are particularly interesting because they indicate that the ratios might be valid when individual specialities are examined in isolation. The 1:2:5 ratio was originally computed from observation on a mixture of patients of different specialities and there is nothing, in theory, to suggest that they are valid if applied to a single speciality. In fact, the DHSS survey of 1044 surgical patients, covering some quarter of a million observations, revealed that the amount of nursing received between 6.00 am and 10.00 pm by patients in the three care groups averaged 30, 61 and 152 minutes per patient respectively which again is in the ratio of 1:2:5. The NE Metropolitan studies showed that the amount of nursing care provided on a ward corresponded exactly with the number of patients in the different groups. This agreement emerged on wards in a wide range of specialities and, whilst it cannot be said to validate the ratios, due to the patients not being considered individually, it indicates that they are sufficiently reliable to provide an efficient measure of the variation between the groups of patients.

Thus far the schemes described have the common characteristic that patients are eventually slotted into one of a small number of separate care groups. Three further schemes have represented attempts to build upon this basic concept. The first, introduced by Peterson (9) was designed for use in an international comparison of medical care where it was felt that a simple reproduceable scheme was desirable. It required an initial subjective classification on basic nursing criteria, this then being augmented by points awarded if specific treatments were being performed for the patient or if he was recorded as being in certain specified conditions. The points are either 3, 2 or 1. Continuous oxygen and chest suction are amongst procedures

qualifying for three points, incontinence and blood transfusions for two, and colostomy and tracheotomy for a single point.

The second system which uses points for conditions and treatment was produced in Canada by MacDonnell (10). The recordings are lengthy and cover:

Section A	clinical monitoring
Section B	technical nursing
Section C	basic nursing
Section D	physical medicine
Section E	psychiatric medicine

Points are associated with either procedures or patient characteristics. Under Section A, for example, 30 points are awarded if the patient's vital signs are recorded more frequently than every two hours. Section B allows 40 points if tube feeding is necessary, whilst Section C includes a 26-point allowance if the patient is urine incontinent. The points are awarded arbitrarily and are not based upon time studies.

The third system constitutes an experiment carried out jointly by the Wessex Regional Hospital Board and the Institute for Operational Research at Southampton (11) where policies for progressive patient care (PPC) are being devised. A finer scale of classification of patients was required by the nursing staff who found that the Oxford method, even with small modifications, was too restrictive, particularly when PPC is being used. For example, the nursing time required by a ward full of intermediate care patients can vary greatly from day to day. An eight-point scale has been devised and time studies performed which showed that in medical wards, for the $13\frac{1}{4}$ hour daytime period, the ratio of nursing time given to patients in the highest and lowest points on the scale was 3:1 for untrained nurses, and 2:1 for trained nurses. In surgical wards the ratios were approximately 2:5:1 for both trained and untrained nurses, with the total times being approximately 25 per cent higher than for medicine.

A further scheme developed by Rhys Hearn (12, 13), lies somewhere between the two extremes of determining the total care required for each individual patient

based on estimated times and placing each patient into one of three defined care groups. In this scheme, basic and technical care are calculated separately. This allows a large number of basic and technical care-group combinations. An attempt is made to include the professional surveillance required by patients, the time factor for this aspect of the nursing workload being based upon the subjective judgement of the ward sister.

Other characteristics of the patient are also recorded, such as 'incontinent' and 'exceptionally emotionally dependent', 'obese', 'violent' and so on. These factors are given additional time allowances but they are based on the subjective judgements of the nursing staff and the results differ in this respect from methods based entirely on observed amounts of nursing activity. The 'care groups' in this study were defined according to fixed nurse-staff times per care group.

For example:

Care group I = 0-15 minutes 'basic'
= 0-15 minutes 'technical'
Care group II = 16-70 minutes 'basic'
= 16-70 minutes 'technical'

and so on, up to 300 minutes for Care group V. The criteria for classifying patients into groups were identified by a special form of statistical analysis and may differ from one hospital to another. However, this method does provide a means of comparing staff needs in different specialities, as the care groups always indicate the same amount of nursing times. It can also be used predictively by knowing nursing orders and asking for assessments of the patient's degree of self-care, and of his surveillance requirements. A system of points is used, but the points for treatments and procedures are derived from various time studies, and the points for basic care requirements per degree of self-care category from the Scottish study mentioned above. Staffing calculations are based on the nursing dependency assessments with an additional allowance per occupied bed for 'indirect' or 'collective' nursing. Other special factors such as rapid throughput (maternity hospital), 'take days', and weekend leave days are also taken into account. Due to its generality, the data-capture and calculations are far more complex than with other systems but they can be modified in certain circumstances. This method

also lends itself to a computerised nursing-record system as it is based largely upon 'orders', and the amount of surveillance a patient needs which it is assumed would be recorded in such a system. Hence, a major problem associated with this approach (ie data collection) is solved, and it is claimed that an up-to-date dependency index can be obtained at any time. In the same way a predicted staffing pattern for the next shift is obtained at the end of each shift, including a specification of the best available ratio of trained to untrained staff. However, if this system were to be set up permanently it would be necessary to carry out extensive time studies both for surveillance and for the technical and basic care procedures in the area. A proper estimation of the time allowances to be assigned to the special characteristics mentioned above would also have to be made and it is therefore restricted in application to the constant availability of specialist expertise and computer facilities.

Of all the methods referred to in this review, that developed by Barr at Oxford is the most sophisticated, and is considered to be the most simple to use. The remainder of the booklet is concerned with a detailed explanation of this method of classifying patient-nurse dependency, its uses and limitations, and in particular the development and use of a work-load index.

THE BARR DEPENDENCY SYSTEM

The research referred to earlier has shown that patients can be classified into groups which are relatively homogeneous in terms of the amount of nursing time given. A large series of patient observations in general medical and surgical wards in the Oxford Region led to the development of three basic care groups. It is important to remember that, although no patient is likely to require exactly the same nursing time as another, all those who come within the same dependency group, using the criteria outlined below will be expected to receive an average quantity of nursing care which is different from that of patients in either of the other two groups. The method of classification of patients now described gives a reliable indication (though not a specific measure) of the dependency of patients in acute general surgical and medical wards including gynaecological patients and orthopaedic patients nursed in general wards. As yet, the results have not been proved applicable to intensive care units or such specialities as obstetrics, paediatrics, geriatrics or psychiatry. Further research is now in progress in these areas. The remaining paragraphs in this and the following two sections are concerned with explaining the system and how to use it. To avoid disrupting the continuity of this explanation instruction relating to the actual recording of the information are deliberately deferred to a later section (page 34).

The criteria used for allocating patients to care groups can be arranged under three broad headings:

(i) The level of illness; for example, whether conscious or unconscious, ambulant or chairfast.

(ii) Combination of physical and mental capacity; for example, children are generally more dependent than adults, and elderly patients are generally more dependent than younger adults; thus 'under 12 years' and 'over 75 years' appear in the definitions.

(iii) Complexity of care; for example, on intravenous infusion, suction, or drainage.

Three care groups can be derived from a range of descriptive statements relating to these headings:

1 low care

2 intermediate care

3 high care

Patients can be allocated to one of the three groups from data recorded on a dependency form (see page 18). Nurses studying the form will notice that the care group criteria are based on direct care only, and some have expressed anxiety because no specific allowances appear to be made for indirect care, namely activities associated with the patient but not actually involving a direct nursing procedure. However, observations have shown that a reasonably good and reliable estimate of the nursing activity on the ward can be obtained from the specified range of direct care only. Additional direct care items were considered initially and found to be highly correlated with those selected for use. It was therefore unnecessary to include them in the classifications. In the interests of simplicity both the indirect care and the additional items of direct care were excluded. It is accordingly unnecessary but, more importantly, unwise to alter the content of the care groups or the form. Their present format is based on considerable and careful timings and any alteration will invalidate their use.

The design and use of the form will be referred to again later but for the moment it is sufficient to point out that it is divided as follows:

Section A: Functional assessment

Section B: Treatment regime

The relevant definitions within these sections are:-

Section A: Information concerning

1 mobility
2 bathing
3 toilet
4 feeding
5 period up
6 mental state

Section B: Treatments in progress

1 oxygen
2 suction/aspirations etc.
3 drainage - bladder, wound etc.
4 peritoneal dialysis
5 IV infusions (incl. blood)
6 respirator or monitor

Instructions involving

specialling
additional staff
TPR, B/P more than 4 hourly
special dressings lasting over $\frac{1}{2}$ hour
injections or drugs involving checking of B/P, Prothrombin, etc.
turning, passive movements, pressure areas 2-hourly or more
operation/anaesthetic today

The constitution of the care groups from these definitions is as follows:

CARE GROUP 1 (LOW CARE)

Patients recorded as

either aged 12-75 years, and recorded as:

Section A
- (mobility : walks without help
- (bathing : self
- (toilet : self
- (feeding : self
- (mental state : no special reassurance/observation
- (period up : $\frac{1}{2}$ day or more

Section B nil

or aged 12-60 years, and recorded as:

Section A
- (mobility : walks with help
- (bathing : self
- (toilet : self
- (feeding : self
- (mental state : no special reassurance/observation
- (period up : $\frac{1}{2}$ day or more

Section B nil

CARE GROUP 2 (INTERMEDIATE CARE)

Patients not classified as care groups 1 or 3.

CARE GROUP 3 (HIGH CARE)

Patients recorded as

either Section A : semi or unconscious

or (Section A : confused
plus
(Section B : any 2 of the 6 specified treatments

or Recorded as aged over 70 years and
(Section B : any 2 of the 6 specified treatments

or Section B : 3 or more of the 6 specified treatments

or Section B : requiring specialling or additional staff

Once the patients have been classified according to the different combinations of dependency criteria set out above the information can be summarised in the form of a single index for a group of patients to provide a valuable management tool for nursing and other staff both within the ward situation and at more senior levels in the hospital. This index which is explained in detail in the next section is known as the Work Load Index.

DAILY WARD REPORT USED IN THE BARR DEPENDENCY SYSTEM

Hospital:
Ward:

Date:
Time:

DAILY WARD REPORT

PATIENT STATE AT TIME OF RECORDING

PATIENT NUMBER	NAME OF PATIENT	AGE	SECTION A. FUNCTIONAL ASSESSMENT																SECTION B. TREATMENT REGIME																		OFFICE USE		
			MOBILITY			BATHING bed or bathroom			TOILET bed or toilet			FEEDING			MENTAL STATE				PERIOD UP				CONTINUOUS OR INTERMITTENT REQUIREMENT AT RECORDING TIME										PRESCRIBED TREATMENT FOR 24 HOURS AHEAD											
			Walks without help	Walks with some help	Non ambulant - chair or bedfast	Self	Some assistance	Complete assistance	Self	Some assistance	Complete assistance (including release indwelling catheter)	Self	Some assistance	Requires to be fed (including via gastric tube)	No special reassurance or observation	Highly nervous/anxious/depressed	Semi- or unconscious - stroke	Confused	$\frac{1}{2}$ day or more	Less than $\frac{1}{2}$ a day	Not up at all	1	2	3	4	5	6	Requires specialling	Requires additional staff for restraining; excessive weight	TPR BP more frequently than 4 hour	Special dressings lasting over $\frac{1}{2}$ hour	Injections or drugs involving checking of B/P, prothrombin	Turning, passive movements, pressure areas 2 hourly or more	Operation/anaesthetic today	Patient's number	Care group	Score
			Oxygen	Suction/aspirations	Drainage-bladder, wound	Peritoneal dialysis	IV infusions (including blood)	Respirator/monitor																															
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TOTAL WORK LOAD INDEX:

INSTRUCTIONS FOR CALCULATING A WORK LOAD INDEX

1 HOW TO COMPLETE THE CHART

SECTION A FUNCTIONAL ASSESSMENT : RECORD 1 CROSS UNDER EACH OF SIX HEADINGS FOR EACH PATIENT.
SECTION B TREATMENT REGIME : RECORD 1 CROSS UNDER EACH RELEVANT HEADING FOR EACH PATIENT.

2 HOW TO DERIVE THE CARE GROUPS

Care group 1 (Low care)

Either Patients aged 12-75 yrs and recorded as:
Section A : Mobility walks without help
Bathing self
Toilet self
Feeding self
Mental state no special reassurance
Period up ½ day or more
Section B : Nil
or Patients aged 12-60 years
Section A : Walks with help - otherwise self-care
plus
Section B : Nil

Care group 2 (Intermediate)

Patients not classified as Group 1 or 3

Care group 3 (High care)

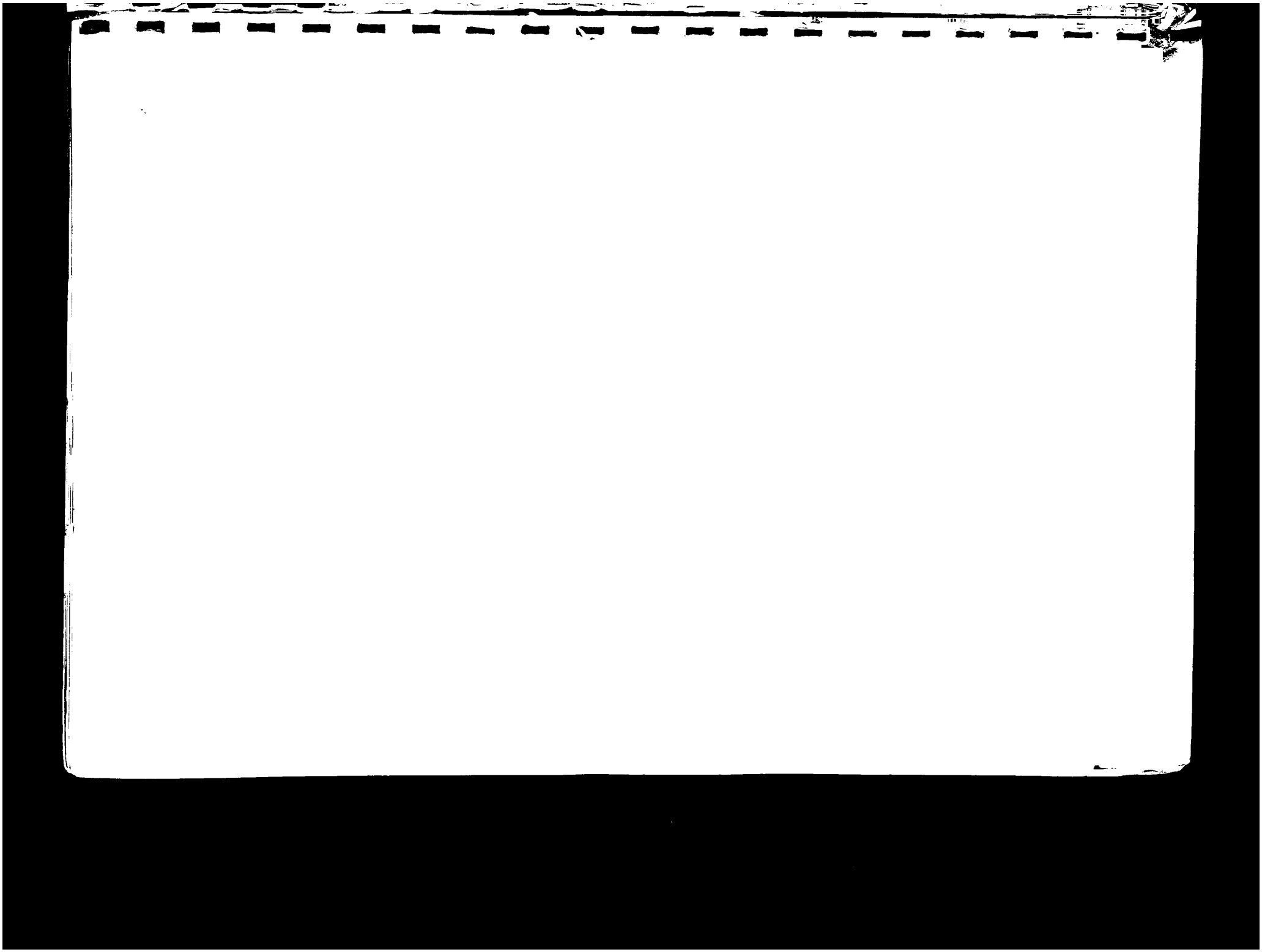
Either Patients recorded as
Section A : Semi- or unconscious - stroke
or
Section A : Confused
plus
Section B : Any 2 of 6 specified treatments
or
Section B : 3 or more of 6 treatments
or
Section B : 2 of 6 treatments and over 70 yrs
or
Section B : Requires specialling or additional staff

3 HOW TO SCORE THE CARE GROUPS

CARE GROUP 1 SCORES 1. CARE GROUP 2 SCORES 2. CARE GROUP 3 SCORES 5.

4 HOW TO DERIVE THE WORK LOAD INDEX

RECORD THE CARE GROUP AND SCORE FOR EACH PATIENT IN THE TWO RIGHT HAND COLUMNS
ADD THE SCORES FOR ALL PATIENTS AND RECORD TOTAL AT FOOT OF COLUMN. THIS TOTAL IS THE WARD WORK LOAD INDEX.



MEASUREMENT OF WORK LOAD, DEVELOPMENT OF THE INDEX AND CAVEATS CONCERNING ITS APPLICATION

The research carried out in Oxford from which this system was developed included observations and timing of 6000 hours of nursing activity. A vital finding of this study was the phenomenon of the 5:2:1 ratio referred to in Section 2 and which as explained was repeated in several other studies. It is upon this finding that the development of the index hinges. It was found that the average nursing times recorded for patients in the three care groups were as follows:-

1 Low care : a basic unit of time

2 Intermediate care : average time twice as great as group 1

3 High care : average time five times as great as group 1

This time ratio of 5:2:1 provides a convenient method of allotting a score to each patient according to his care group, that is:

Care group 1 (low) is given a score of 1

Care group 2 (intermediate) is given a score of 2

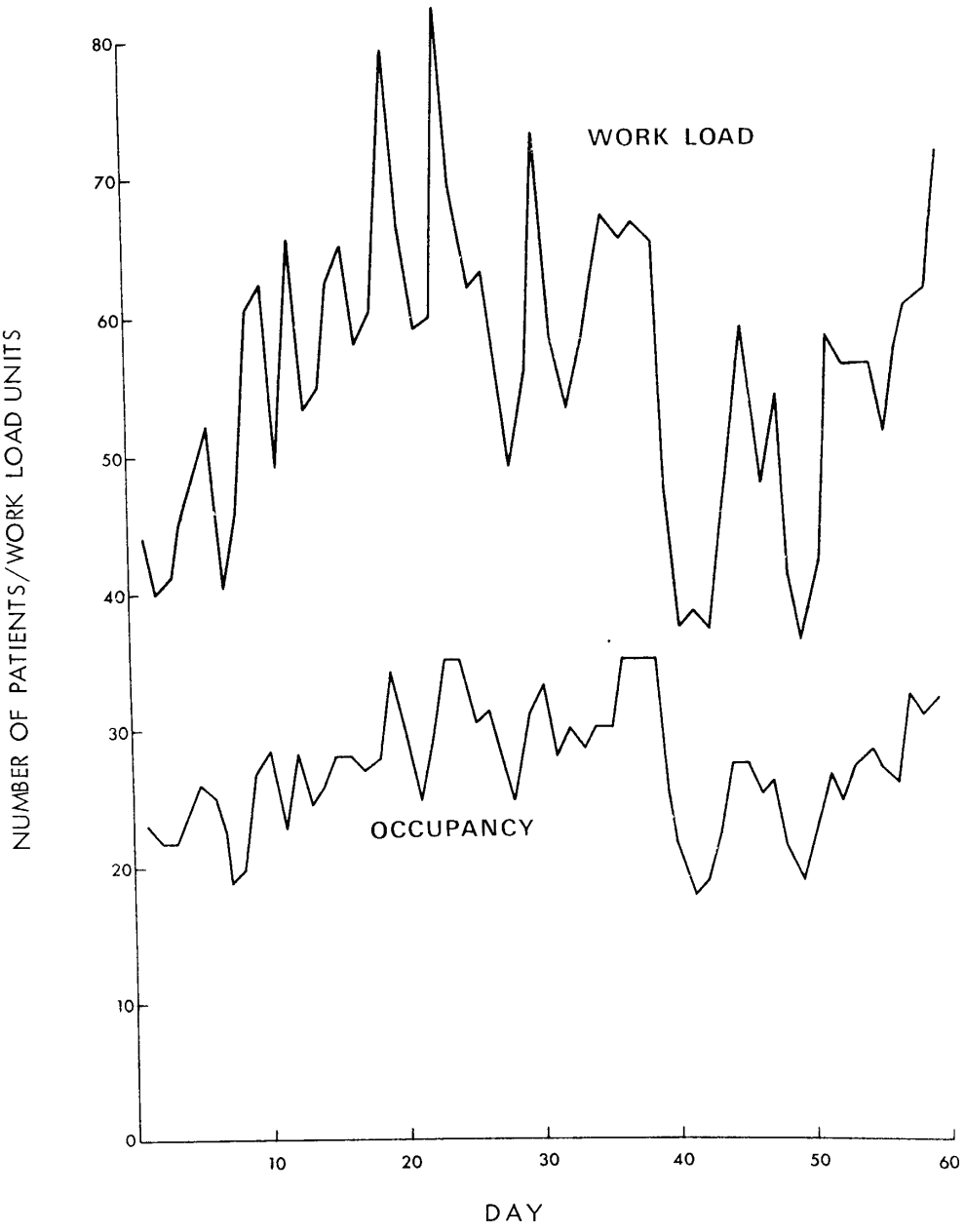
Care group 3 (high) is given a score of 5

As an example, if a ward has 30 patients of whom five are classified care group 1, 21 as care group 2, and four as care group 3 then the work load index (WLI) for the ward is calculated thus:

	Number of Patients	X	Score for Each Patient	=	WLI for each Group
5 patients in group 1	5	x	1	=	5
21 patients in group 2	21	x	2	=	42
4 patients in group 3	4	x	5	=	20
TOTAL Ward WLI					67

Summing the index for all wards provides a work load index for a whole nursing unit or group of units. On page 33 a completed form for a group of 20 patients is shown. Of these, four are low-care, twelve intermediate care and four high care, giving a ward WLI of 48. A useful exercise for those who intend using this method would be to check the coding of the care groups shown on the completed form and the

Fig. 1 Occupancy and work load (based on 3 care groups) for period of two months in a general surgery ward



SOURCE: Oxford Regional Hospital Board, Operational Research Unit Report number 9 Measurement of nursing care

resulting WLI. Completion of the form itself is dealt with in greater detail in Section 6.

To many nurses the WLI seems, at first sight, little more than an unnecessary chore since their main interest lies in giving the nursing care for which they have been trained. Further, they argue that the ward sister or unit nursing officer already knows the needs of her particular area. Whilst there is merit in this argument, practical experience shows considerable variability in such estimates made by ward sisters for apparently similar work. In addition, for quite legitimate reasons, estimates of the staffing required often give rise to a total staff requirement which exceeds the number that can be recruited, or the revenue that can be spent on them. Some method is therefore required to ensure that available nursing staff are allocated and deployed in the most effective manner.

Examination of the day-to-day changes in a typical work load index confirms the experience of nurses from their earliest student days that the amount of work in a ward or unit fluctuates considerably. In fact, because of the differences between patients who happen to be in a ward at different times it can vary more than the number of occupied beds. This is clearly demonstrated in Figure 1 on page 25. To some nurses this fluctuation adds interest and variety to the daily routine but to many others it is a source of irritation and inefficiency. Some fluctuation in work load is virtually inevitable because of the nature of illness and the organisation of theatre lists and so on, but excessive variations can lead to stresses and strains which adversely affect the standard of patient care. Control of this variation must therefore represent a major challenge to nursing management.

As yet there is no completely satisfactory and accepted method for measuring the nursing requirements for a ward or unit. Various approaches are being explored and each has both advantages and disadvantages. The method most commonly used in this country is the nurse/bed ratio. Although simple to apply, this ratio makes no allowance for differences between patients in the demands they make upon the service. It is based on the tacit assumption that all patients are equal, which is an unacceptable approximation. Ratios are clearly not applied in every case. In practice an element

of barter exists whereby allowances are sometimes made for the geography of the ward, type of case, grade of staff. What often happens is that the ward sister assesses the work load and, if necessary, makes a bid for any additional staff available in order to match staff hours to the needs of the patients. The accuracy of the match can be greatly improved by the introduction and use of an appropriate currency in making such bids. The WLI is in effect just such a currency. Despite the fact that it does not convert automatically to a nursing establishment, users have found the index to be a helpful introduction in the process of negotiating staffing levels. For example, in a situation where the number of beds is reduced, the WLI may remain the same because the existing beds will be more intensively used and in some instances the work load may actually rise. A WLI enables nurses to demonstrate this.

Having explained the way in which the system works it is at this stage appropriate to emphasise some important points on the interpretation of care groups and work load index.

a) Because, as explained earlier, the care groups are based on average times, and not every patient is 'average', it is possible for nurses to observe that on any particular day, a patient in 'intermediate care' according to the definitions, may require as much or more time as a patient in 'high care' or, alternatively, he may consume only as much nursing time as a 'low care' patient or less. Such situations will occur, for example, when a 20-minute treatment merits no greater score than a 5 or 10-minute treatment. Because the care groups are based on average times a minority of cases will occur at the extreme high or low times. Even so, the classification for these patients should not be altered, as the timing averages out for groups of patients over a period of time and the effects are further reduced as the number of patients in the system increases.

b) Some nurses feel that getting a dependent patient up takes more nursing time than keeping the patient in bed and consequently, the score for bedfast should be less than for chairfast or ambulation, rather than the reverse, which is the current practice. Though this is a reasonable point of view, the data available indicates that the majority of bedfast patients in acute general wards consume more nursing time than do the remaining patients.

c) Care groups reflect the care the sister intends the patient to receive. It is the responsibility of nursing management to ascertain that this care is in accordance with professionally agreed standards and that it is actually delivered.

d) In comparing the work load between wards for purposes of distributing nursing resources fairly, the provision of supporting services must be remembered. For example, housekeeping teams, ward clerks, and topping-up services affect the deployment of nursing staff within the ward.

e) The Barr method, for the classification of patients and the production of a WLI was developed in mixed dependency wards. Some users have found that for monitoring a progressive patient care system, a method developed specifically for the latter may be more appropriate although this is not essentially so.

f) Because of the dramatic rise in the geriatric content of the medical emergency work load, some nurses have expressed the view that the dependency of such patients may now make higher demands on nursing time than surgical patients. No research to date has confirmed any significant difference however between the two specialties.

The above points are made to assist users by providing them in advance with the answers to some questions which will arise in the course of implementing the system. More importantly it is stressed that experience has already shown the considerable advantages to be gained in using such a system which far outweigh the known limitations at this stage in the research. In psychiatric, geriatric or community nursing or maternity work, a great deal of work has still to be done in devising suitable criteria for classifying patients into patient-nurse dependency groups, in timing activities in a wide enough range of situations to use average times with confidence, and in discovering if relationships exist between meaningful categories of patients from which a work load index for these special fields could be developed. Equally if comparisons between work loads in wards catering for different specialties are to be made possible, the classifications used must have a common time base.

Appendix A describes the basic research process which is typical of the background work involved in developing measures of work load. It is included as additional information for nurses interested in the underlying principles but it is not essential for understanding or using this booklet. The process is used to develop a simple scoring system and is based on actual timing of direct, indirect and routine care. It is more cumbersome to use than the work load index but it claims to be capable of extension to all fields of nursing work. It is hoped that in time, a do-it-yourself guide for working through this process will be produced. Meantime, there is much to be said for gaining experience in the less complex system of patient-nurse dependency classifications and work load measurement using the work load index developed in Oxford. In the following section the two principal applications of the WLI are explained and discussed.

USE OF THE WORK LOAD INDEX

The work load index may be used in one of two ways,
either

a) to adjust the allocation of nurses to wards according to the level of the WLI

or

b) to allocate incoming patients to wards according to the level of the WLI

a) Allocation of nurses means, in effect, moving staff from areas of comparatively low work load to areas of high work load. This approach may appear to be of limited value since most nurses prefer to be allocated to one ward for a specified time. The idea that the scheme will give rise to excessive movement of staff is, however, incorrect as there are various ways of implementing the method which avoid this difficulty. One approach is to create a small pool of nurses who could be transferred to wards developing excessively high work loads. Such nurses could be allocated to wards over and above the normal ward allocations, for a fixed period of time, and would only leave these wards as and when crises occurred elsewhere. In a large hospital the pool could be organised on a nursing unit basis, thus avoiding the necessity for a nurse to move outside her particular Salmon unit or specialty under most circumstances. Nurses at the second dependency conference were able to allay anxieties on excessive movement from their practical experience of using the system. This had shown that only two or three part time nurses were needed to cover eight wards.

b) Providing the necessary cooperation of the consultant medical staff has been obtained, the allocation of incoming patients to various wards can be most easily achieved by maintaining a WLI for each ward and adopting the general rule of allocating each new admission to the ward with the lowest index. Obviously, the benefit will be greatest where all the wards participate, but this is not an essential condition to implementation. It will often be found convenient to start the scheme in one department (for example, general medical wards) and gradually extend it in the light of experience. Since the workload may vary throughout the day it is necessary to make arrangements for the index to reflect as many of the changes as

possible. In most hospitals one main return is all that can reasonably be expected in a 24-hour period, but it is often practical to adjust the index in respect of admissions and discharges. At the most elementary level this adjustment could be an increase of, say, score 2 for each admission and a reduction equivalent to the last care group score of each discharged patient. A more sophisticated allowance might be made for admissions by scoring 1 for a waiting list case, 2 for a non-emergency, non-list case, and 5 for an emergency admission. In other circumstances it may be feasible for the ward sister to provide the basic dependency data after the admission procedure is completed. Various modifications to the general rules may be necessary. For example, the ward with the lowest index may have no vacant beds, certain types of patients may only be admitted to specific wards, more than one ward may have the minimum index, or the ward with the lowest index may have taken several admissions in rapid succession. The most suitable modification for any particular situation must be determined locally. Some of the available alternatives may be for example, to admit a new patient to the ward with the second lowest index, to erect an extra bed in the ward with the lowest index if this ward has no empty beds, or to permit no more than three admissions in succession to any ward even though the index for that ward may be the lowest. An evaluation of this method extending over five years (14), indicated that the policy of admitting patients to the ward with the lowest WLI (as opposed to the traditional 'on take' policy) reduced the fluctuation in the work load of the wards by 50 per cent when four wards were involved. The greater the number of wards combined, the greater will be the reduction in fluctuation which can be expected.

It will be noted that the distinction between the two applications of a work load index is that one involves the redistribution of staff and the other that of patients. In one situation an acceptable unit of WLI per available nurse has already been agreed with medical staff, for example, 10 units per nurse; thus for a ward with eight nurses a maximum WLI of 80, for a ward with seven nurses a maximum WLI of 70. Above this level, cold admissions must be halted or additional nursing hours provided. It may be necessary in some situations to operate a modified version of each method. For example, a relatively small ward may frequently be full and yet have the lowest WLI. If extra

beds are not feasible because of limited space it may be necessary to transfer a nurse from such a ward as a temporary measure to redistribute the work load per nurse in a heavier ward.

RECORDING THE INFORMATION

Recording the care group information, as with coding of the care groups and calculating the WLI,is a straightforward process. Experience shows that the information, which can be recorded on a ward chart by a series of crosses, is easily understood by the nursing staff and presents little difficulty in interpretation. With a little practice, records of a ward of up to 35 patients can be completed by a ward sister in approximately 10-15 minutes per day. The form recommended for general use is that shown on page 34. It will be noticed that not all the items on the form appear in the care group definitions. This is because the accuracy of the recordings is usually higher where each section of the form has a definite entry for each patient. Therefore whilst it is true that this form could be reduced in size and still serve the purpose outlined above, it is not recommended, particularly in the early stages of implementation.

If a system of one recording in 24 hours is agreed on, the most convenient time may be 8 to 9 am. In some instances it may be thought appropriate for the night staff to prepare the classifications even earlier to be confirmed in agreement with the ward sister at 8 am. Alternatively it may be that 12 noon or earlier may be the most convenient time for completing the form. This allows sisters to take account of decisions arising from morning ward rounds, non emergency admissions and discharges. As an aid to sisters in completing the form, it is worth stressing the following details:

A FUNCTIONAL ASSESSMENT

mobility
bathing
feeding
toilet
period up
mental state

patient's state at time of completing form. Each of these sections requires one cross only

B TREATMENT REGIME

- oxygen
- suction/aspirations
- drainage-bladder, wound
- peritoneal dialysis
- IV infusion including blood
- respirator/monitor
- specialling/additional staff

→ an entry should be shown if patient is undergoing these items of treatment either continuously or intermittently

- frequent TPR, BP.
- injections and special drugs
- special procedures
- pressure areas and turning

→ a cross should be shown if instructions have been issued (or are about to be issued) for the treatment to continue or to be commenced during the following 24 hours from the time of recording

In the completed form shown on page 34, information is included to demonstrate for example, the difference between a care group 1 patient: low care (patient No 6) and an almost identical patient (patient No 7) who is classified as being more highly dependent (intermediate care) due to being over 75 years of age. Inspection of the completed form will show that the intermediate care group covers a wide range of dependency so that for example patient number 16 is clearly more heavily dependent than patient number 1. The reason for two such patients appearing in the same care group was explained in Section 4 (pages 24-29). Having explained this, it is then sufficient to point out the existence of what may at first sight appear to be an anomaly and to reassure readers that these are expected and explicable observations.

The following two pages give an example

of

The Barr Dependency System in use

DAILY WARD REPORT USED IN THE BARR DEPENDENCY SYSTEM

Hospital:
Ward:

Date:
Time:

DAILY WARD REPORT

PATIENT STATE AT TIME OF RECORDING

SECTION A. FUNCTIONAL ASSESSMENT

PATIENT NUMBER	NAME OF PATIENT	AGE	MOBILITY: Walks without help	MOBILITY: Walks with some help	MOBILITY: Non ambulant - chair or bedfast	BATHING bed or bathroom: Self	BATHING bed or bathroom: Some assistance	BATHING bed or bathroom: Complete assistance	TOILET bed or toilet: Self	TOILET bed or toilet: Some assistance	TOILET bed or toilet: Complete assistance (including release indwelling catheter)	FEEDING: Self	FEEDING: Some assistance	FEEDING: Requires to be fed (including via gastric tube)	MENTAL STATE: No special reassurance or observation	MENTAL STATE: Highly nervous/anxious/depressed	MENTAL STATE: Semi- or unconscious - stroke	MENTAL STATE: Confused	PERIOD UP: ½ day or more	PERIOD UP: Less than ½ a day	PERIOD UP: Not up at all
1		21	X			X			X			X			X				X		
2		60	X			X			X			X			X				X		
3		58			X			X			X			X			X				X
4		28		X			X		X			X			X					X	
5		65	X			X			X			X			X				X		
6		47	X			X			X			X			X				X		
7		78	X			X			X			X			X				X		
8		46	X			X			X			X			X					X	
9		64			X			X			X			X			X				X
10		29			X		X			X		X			X					X	
11		25	X			X			X			X			X				X		
12		56	X			X			X			X			X				X		

SECTION B. TREATMENT REGIME

PATIENT NUMBER	CONTINUOUS OR INTERMITTENT REQUIREMENT AT RECORDING TIME: 1 Oxygen	2 Suction/aspirations	3 Drainage-bladder, wound	4 Peritoneal dialysis	5 IV infusions (including blood)	6 Respirator/monitor	Requires specialling	Requires additional staff for restraining; excessive weight	PRESCRIBED TREATMENT FOR 24 HOURS AHEAD: TPR BP more frequently than 4 hour	Special dressings lasting over ½ hour	Injections or drugs involving checking of B/P, prothrombin	Turning, passive movements, pressure areas 2 hourly or more	Operation/anaesthetic today
1											X		
2													
3		X			X				X	X		X	
4									X		X		
5											X		
6													
7													
8										X			
9	X				X							X	
10										X			
11										X			
12													

OFFICE USE

PATIENT NUMBER	Patient's number	Cue group	Score
1	2	2	
2	1	1	
3	3	5	
4	2	2	
5	2	2	
6	1	1	
7	2	2	
8	2	2	
9	3	5	
10	2	2	
11	2	2	
12	1	1	

13		39		X			X			X		X			X				X							X						X			13	2	2
14		80			X			X			X			X			X				X			X		X									14	3	5
15		80	X			X			X			X			X				X																15	2	2
16		48			X		X			X		X				X					X					X						X			16	2	2
17		76	X			X			X			X			X				X												X				17	2	2
18		62			X		X			X		X				X					X										X				18	2	2
19		50			X			X			X			X			X			X	X	X			X		X		X			X		19	3	5
20		62	X			X			X			X			X				X																20	1	1
21																																			21		
22																																			22		
23																																			23		
24																																			24		
25																																			25		
26																																			26		
27																																			27		
28																																			28		
29																																			29		
30																																			30		

TOTAL WORK LOAD INDEX: 48

INSTRUCTIONS FOR CALCULATING A WORK LOAD INDEX

1 HOW TO COMPLETE THE CHART

SECTION A FUNCTIONAL ASSESSMENT : RECORD 1 CROSS UNDER EACH OF SIX HEADINGS FOR EACH PATIENT.
SECTION B TREATMENT REGIME : RECORD 1 CROSS UNDER EACH RELEVANT HEADING FOR EACH PATIENT.

2 HOW TO DERIVE THE CARE GROUPS

Care group 1 (Low care)

Either Patients aged 12–75 yrs and recorded as:

Section A : Mobility — walks without help
Bathing — self
Toilet — self
Feeding — self
Mental state — no special reassurance
Period up — ½ day or more

Section B : Nil

or Patients aged 12–60 years

Section A : Walks with help – otherwise self-care

plus

Section B : Nil

Care group 2 (Intermediate)

Patients not classified as Group 1 or 3

Care group 3 (High care)

Either Patients recorded as

Section A : Semi- or unconscious – stroke

or

Section A : Confused

plus

Section B : Any 2 of 6 specified treatments

or

Section B : 3 or more of 6 treatments

or

Section B : 2 of 6 treatments and over 70 yrs

or

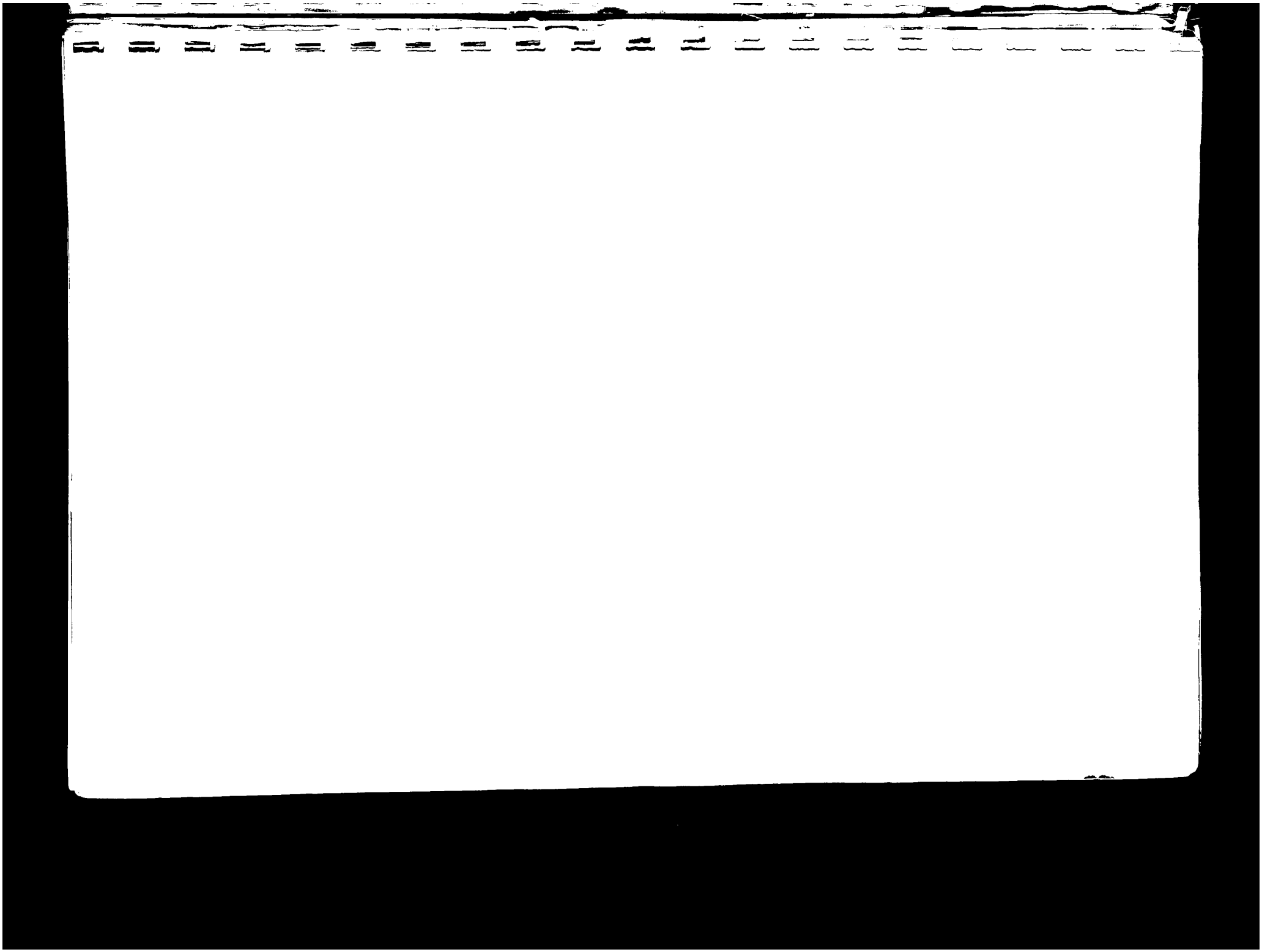
Section B : Requires specialling or additional staff

3 HOW TO SCORE THE CARE GROUPS

CARE GROUP 1 SCORES 1. CARE GROUP 2 SCORES 2. CARE GROUP 3 SCORES 5.

4 HOW TO DERIVE THE WORK LOAD INDEX

RECORD THE CARE GROUP AND SCORE FOR EACH PATIENT IN THE TWO RIGHT HAND COLUMNS.
ADD THE SCORES FOR ALL PATIENTS AND RECORD TOTAL AT FOOT OF COLUMN. THIS TOTAL IS THE WARD WORK LOAD INDEX.



THE DUNDEE RECORDING SYSTEM

An alternative system of recording based on the Barr method of classification has been developed in Dundee and is shown in Appendix B. This form serves a dual purpose in that it replaces the traditional Kardex nursing record in addition to recording the dependency data. Although more extensive than the Oxford form, the Dundee system makes use only of the information relevant to the care groups as defined in the preceding sections. Colour coding has been introduced so that classification is made simple and rapid. The way in which this is achieved is clear from the form. The form is folded in such a way that the last two lines, namely the 'calculated dependency' and 'predicted dependency' are always visible and this facilitates ready reference by the nursing or medical officer. Predicting the nursing dependency over the next 12 hours is feasible on the majority of occasions and the nursing officer using this prediction and her estimate of potential changes in the circumstances (for example, admissions) can calculate an expected work load for the ward. Those occasions when a patient fails to progress as predicted may require review by the medical and nursing staff. Thus the record might be a useful tool in directing attention to areas of need. It has already been found in Dundee to function as a joint nursing-medical record and has thus superseded existing records by virtue of its increased value and convenience. The Dundee form, although based entirely on the Barr method, was not designed for the calculation of WLI. It is primarily a monitoring system and nursing record as opposed to a device for improved nursing deployment or patient allocation. Headings on the form have been altered slightly in accordance with these objectives. If intended for WLI the Barr headings must be replaced in the interests of accuracy. Because this is an individual patient record a second form will be required to collect the information from each record if it is to be used for calculating a WLI. This may vary from a sheet of paper on which the three groups are listed and against which the individuals in each group can be checked (see Figure 2), a list of patients against which the classification can be shown when the information is wanted for display (see Figure 3).

Figure 2 Transcription form: number of patients in each care group (Dundee system)

care group	count	total number of patients	WLI
1 low care	1111	4	4
2 intermediate care	~~1111~~ ~~1111~~ 11	12	24
3 high care	1111	4	20
		total	48

Figure 3 Transcription form: care group of each patient (Dundee system)

patient no.	care group	WLI
1	2	2
2	1	1
3	3	5
4	2	2
5	2	2
	total	12

Despite the added complexity of the Dundee form, many nurses who have used it have expressed confidence in its value, principally because it has emerged as an easily understood joint nursing-medical monitor of patient state and progress in addition to its basic potential as a measure of work load. As with the basic Oxford form, there are some as yet unresolved problems in the use of the Dundee variant. One anxiety expressed by some nurses is the discrepancy which can arise in the record if circumstances result in a change of activity from the nursing order recorded

by the sister or nurse in charge in the appropriate section. The Dundee form is at this time undergoing revision in an effort to improve on its accuracy. Even so, like the caveats discussed in Section 4 none of the limitations referred to are of such magnitude that they seriously diminish the real advantages gained in general for patients and staff by the use of the system either with the Oxford or the Dundee forms.

IMPLEMENTATION OF THE SYSTEM

There are a number of essential preliminaries which must be attended to in deciding to introduce the basic method described in this booklet. The method must then be implemented in a series of defined steps and the results should then be evaluated. Comments on some of the most important points in these processes follow.

a) Discussions with ward and senior nursing and medical staff

The specific objectives to be achieved by measuring work load for a particular ward, unit, or hospital must be determined as a first step. The length and complexity of the introductory period will depend on the range of wards or units to be involved and the type of system envisaged. In some instances the discussions and decisions may be almost entirely connected with nursing considerations. In most cases, however, medical and administrative staff will necessarily be involved to a greater or lesser degree. The essential requirement is that all who are likely to be affected should be consulted early in the process.

b) Allocation of responsibility for implementation

If a decision is taken to proceed with implementation it is important that the management of the entire process should be made the responsibility of a senior officer who may or may not be a nurse.

c) Location of office and purchase of equipment

The first tasks of the officer responsible for implementation will be the negotiation of a suitable office as a centre for dependency data, and the purchase of forms and equipment (for example, display board for dependency data). This part of the process clearly requires the involvement of the administration.

d) Determine the routine

Agreement must be reached on the most appropriate time for recording the information on the forms supplied, collecting the completed forms, processing the data, and disseminating the results to strategic personnel or departments for action. In addition

to timing, the method of procedure and the personnel involved in each of these steps must be agreed, and these individuals instructed accordingly. For example, sisters must learn how to complete the form, porters or messengers must be organised to transfer forms from wards to the office, and processed data to users, and clerical assistance will be required in the office to complete the processing and dissemination stages. Nurses who have already experienced the implementation of a dependency system have emphasised the necessity of adequate clerical assistance to maintain the system effectively. Depending on the facilities, it may be possible to supply forms to wards daily with patients' names already listed. Alternatively, where ward staff can cope with the clerical work it may be sufficient to issue a supply of blank forms to wards, along with relevant instructions for use.

e) Commence recording

Once a decision has been taken about the time of recording ward sisters must be reminded of the agreed time of completion and told when and how the information will be collected from the wards. It would be advisable to issue one copy of the dependency booklet to each ward office and state the location of a reference copy which should be available in the unit office or other dependency office. The form should be completed according to the explanations in Section 6 or 7 and the information must be carefully checked either by the sister herself on completion or in conjunction with another member of the ward team. This is particularly important when in unavoidable circumstances the recording is done by someone other than the usual sister or staff nurse.

f) Calculate the work load index

It may be found appropriate in many instances to delegate general supervision of this stage to the unit nursing officer, although it is equally possible that if implementation has been commenced on a unit basis, the nursing officer may have already been selected to manage the entire process of implementation.

i If the Dundee form has been used, the classifications will have to be collected from the individual forms as shown in Section 7. Using the Oxford form,the classifications will already be recorded on a single sheet.

ii The WLI is then calculated by multiplying the number of patients in each category by the appropriate score for that category and adding the result:

ie Number of patients in care group 1 x 1 =
" " " " " " 2 x 2 =
" " " " " " 3 x 5 =
total = WLI

g) Use of the resulting index

If there are approximately the same number of beds in each of the wards in the system, the WLI for all the wards can be compared as a means of allocating staff or patients. If the wards are of varying size, it will be necessary to agree on a maximum acceptable WLI per ward which ensures that the WLI per available nurse does not exceed an agreed level. For example, a WLI of 80 for a ward with 10 nurses will give a WLI per nurse of 80 divided by 10, that is, 8 units per nurse. On a ward with only five nurses, the same ward WLI of 80 would result in 16 units per nurse ie. twice as many as in the first ward. A balance between the two would obviously be 12 units per nurse. To achieve this the first ward must have an increase in patients or a decrease in nurses.

h) Display and updating of information

It is often useful to have a display board to show the state of the wards. This should be located in the dependency office which may be also the admissions office (if implementing on a broad scale) or the unit nursing officer's office (if implementing on a unit basis) or an entirely separate office. It is suggested, however, that where nursing officers have a unit allocation board for nursing staff, a comparable work load board would provide them with a valuable complementary management tool. Admissions and discharges from the ward should be notified as they occur in order that the index can be updated. The simplest adjustment is to increase the work load index by scoring 2 for each admission and reduce it by the score equivalent to the last care group for each discharge. A more sophisticated allowance can be incorporated depending on how much information is available on the patient. The need for a rapid system of feedback of the WLI data is emphasised. Only in this way can the potential

benefit be realised.

i) Evaluation

It is always a good thing to check that any new system used in management is proving valuable. One method of evaluating the use of WLI in staff allocation would be to undertake a comparison of staffing levels, WLI, occupancy and average length of stay of patients for each ward involved before and after implementation; information might be recorded for six months in each case. A useful way of demonstrating the results as the evaluation progressed would be by plotting them on a graph. More sophisticated would be the use of statistical methods to check that any difference in the figures following implementation was greater than could have arisen by chance; but this, of course, would necessitate help from an expert statistician.

THE END OF THE BEGINNING

More research is necessary before final conclusions on dependency can be drawn. Meantime it may be of value for hospitals, interested in improving the use of nursing resources, to adopt the Barr method described in this booklet, bearing in mind the need to adapt new proven schemes which will gradually become available as the various research efforts at present in progress develop. The adaptation of the Oxford system in use in Dundee as stated earlier has proved particularly useful as a joint medical-nursing record and patient monitoring system. This is clearly a most valuable development, which may also be worthy of consideration as a second phase for hospitals willing to embark initially on the use of the system in its simplest form.

If users find themselves unable to derive the advantages suggested in this booklet, it is possible that they are in need of the more refined techniques for special classes of patient. Such techniques are the subject of continuing research. Meanwhile readers are urged not to reject the concept of patient-nurse dependency and to increase their understanding of the subject by reference to the published work listed at the end of this report. Appendix A outlines the basic research process underlying the development of any system of patient dependency. It is again emphasised that this is simply for the information of nurses who are interested in increasing their understanding of the philosophy of dependency studies. It is not essential reading for all potential users and is most certainly not intended as a prescription for any nursing staff to attempt to carry out their own research - an activity which calls for a high level of skill and specialist knowledge. Many nurses are, however, eager to increase their understanding of new developments in this field of research and it is principally to these readers that Appendix A is directed.

It has been emphasised throughout the booklet that measurement of patient-nurse dependency represents a stage in the progress of research aimed at accurate measurement of care. It is a stage which may perhaps be most approriately described as 'the end of the beginning'. However, the use to date of the Barr system has produced sufficiently

satisfactory results to justify a categorical statement for the assurance of potential users. It is that applied correctly the method works and it should not be modified. If problems arise in the initial stages the appropriate course of action is:

a) to give the system time to settle down and apparent difficulties may well resolve themselves
b) to obtain advice from those experienced in the use of the method if problems persist.

Finally, as an encouragement to all users and potential users of the system it should be remembered that the full value of patient-nurse dependency can be realised through careful implementation, albeit over a period of time, and as in all innovating endeavours, perseverance is essential for success.

Appendix A AN OUTLINE OF THE BASIC RESEARCH PROCESS

In the long term the aim of dependency research is to develop dependency criteria which lend themselves to comparison between specialties. The basic research process by which it is hoped eventually to develop care groups and work load index suitable for use across the entire range of physical illness specialties can be described in nine stages. Not all of the stages have been incorporated into all of the studies so far referred to. The most complex to date which does reflect most of these stages is that of Rhys Hearn in Birmingham whereas the work in Oxford and Dundee, for example, did not attempt such a comprehensive approach.

Stage I attempts to define 'nursing' as opposed to non-nursing care. Allocation of responsibilities between nursing and other staff vary between wards and hospitals according to availability of paramedical and ancillary staff, clinical objectives, administrative policy, structure and function of buildings etc. Calculations on nursing time per care group must take account of all these variables and their effect on nursing deployment.

Stage II categorises observable activities into 'Direct' and 'Indirect' care, ie activities involving actual nurse patient interaction as opposed to activities associated with the overall management of patient care. In addition, 'collective' as opposed to 'individual' activities are identified at this stage, ie routine drinks round or toilet round to all patients by one or more nurses, or selective activity to certain patients only. A 'who does what' study is also incorporated at this stage to assist in the later development of a desirable skill mix of trained/student/auxilliary nurses.

Stage III categorises direct care according to the following three requirements:

a) basic care - required by all patients in varying degrees in support of normal living functions such as normal respiration, eating, drinking, posture, rest, clothing, cleanliness.

b) technical care - required by certain patients in varying degrees depending on level of illness, medical and nursing prescriptions.

c) skilled care - patient requirements in addition to (a) or (b) requiring professional nursing surveillance to assess and meet patients' needs for teaching, reassurance, rehabilitation, clinical intervention.

Stage IV identifies the presence of specific patient characteristics (referred to as dependency factors) such as excessive obesity or confusion which lengthen the normal nursing time required according to the previously identified criteria.

Stage V involves the design of a data collection form which records the required information concerning each patient in respect of the care break down described in Stage II.

Stage VI requires time studies to determine average times for each of the observed activities specified in the previous stages. Alternatively these times may be obtained from reports of work study analysis of other wards.

Stage VII involves a pilot study to test the adequacy of the data collection form.

Stage VIII is the process of recording detailed observations on each patient using the tested data collection form. This gives a daily record of all the activities associated with each patient to determine the criteria which reflect different quantities of required nursing for patients who will therefore belong to different care groups. These recordings may be made retrospectively, unlike those of Stage VI. The difference between the two is that Stage VI is concerned with actually measuring the time for each activity and therefore requires direct time studies. In Stage VIII the recordings are simply stating the activities actually associated with each patient, following which the estimated time for all the activities can be summed from the times produced in Stage VI. These stages do not provide a means of predicting staffing requirements and hence are unsuitable for deployment of staff.

Stage IX derives criteria for care groups on the basis of the recordings made in Stage VI and VIII. Further analysis can then be carried out to identify the items which most

significantly determine the variation in nursing time between the care groups. Once this is done a simple data form can be designed which deals only with these significant criteria.

Stage X is the implementation stage of a routine dependency system. The forms are completed daily as described in Section 6 (Recording the information) of the booklet. By completing the data form predictively and arranging for analysis early in the day, redeployment of nurses where possible can be effected.

NURSING ORDER AND COMMUNICATION SHEET

Surname ..... Unit No. .....
Christian Names ..... Male/Female
Address ..... Ward/Op
..... Hospital
Age ..... Date of Birth .....
Occupation ..... Religion .....
G.P. ..... Consultant .....

Date	Nursing Care/Treatment	Date Completed

Date	Specimens/Investigation	Date Completed

Date	Activity/Ambulation	Date Completed

Date	Diet	

Date	Special Observations	

URINALYSIS

	S.G.	p.H	Sugar	Protein	Ketones	Blood

DMR 42

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Bath				
Pressure Areas				
Oral Hygiene				
Bowels				
Hair Care				
Others:—				
Height Weight				
Temperature				
Pulse				
Respiration				
MOBILITY Independent				
Up at least 6 hours				
Help required				
Up more than 3 hours				
Up less than 3 hours				
Bedfast/Chairfast				
TOILET Independent				
Assistance/Supervision				
[illegible]				

PARAMETERS

Nursing Report | Si

lephone No. | Time Admitted | A.M./P.M. | Date of Admission

ddress of Next of Kin | Telephone No.

nown Allergy (including Antibiotics and Drugs such as Morphia)

Surname ..... Unit No. .....
Christian Names ..... Male/Female .....
Address ..... Ward/Op. .....
..... Hospital .....
Age ..... Date of Birth .....
Occupation ..... Religion .....
G.P. ..... Consultant .....

ctions to Therapeutic and Non-Therapeutic Procedures

Nursing Report | Si

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Si

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Age ..... Date of Birth .....

Occupation ..... Religion .....

G.P. ..... Consultant .....

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Nursing Report

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NURSING REPORT

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Weight

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LITY Independent

at least 6 hours

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more than 3 hours

less than 3 hours

dfast/Chairfast

ET Independent

istance/Supervision

~~hed by Nurse~~

lpan/Commode

ontinent S/U

ING Self

istance

Nurse

TMENT

be fed

. Infusion etc.

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inage(urinary or other)

se/Blood Pressure more than 4 hourly

itoneal Dialysis

nitoring

Nursing Care

AL STATE Normal

otionally Disturbed

nfused

conscious

Y FOR DISCHARGE (Reason for continued stay after 48 hours to be noted in report).

me with/without Assistance

ner Hospital

Geriatric Waiting List

UR BAR CODE No colour – Group 1 unless under 12 years or over 75 then Group 2 Blue –Group 2 Three Green –Group 3
Two Green + confused or emotionally disturbed –Group 3 Red –Group 3 Special –Group (3) Two Green + over 70 years – Group 3

ted Dependency

h
ssure Areas
l Hygiene
wels
r Care
hers:—

ght Weight
mperature
se
spiration

OBILITY Independent
Up at least 6 hours
Help required
Up more than 3 hours
Up less than 3 hours
Bedfast/Chairfast

OILET Independent
Assistance/Supervision
~~Washed by Nurse~~
Bedpan/Commode
Incontinent S/U

EDING Self
Assistance
By Nurse

EATMENT
Tube fed
I.V. Infusion etc.
Suction
Oxygen
Drainage(urinary or other)
Pulse/Blood Pressure more than 4 hourly
Peritoneal Dialysis
Monitoring
cial Nursing Care

NTAL STATE Normal
Emotionally Disturbed
Confused
Unconscious

ADY FOR DISCHARGE (Reason for continued stay after 48 hours to be noted in report).
Home with/without Assistance
Other Hospital
On Geriatric Waiting List

OLOUR BAR CODE
No colour – Group 1 unless under 12 years or over 75 then Group 2 Blue –Group 2 Three Green –Group 3
Two Green + confused or emotionally disturbed –Group 3 Red –Group 3 Special –Group (3) Two Green + over 70 years – Group 3

culated Dependency
dicted Dependency
ials

dee Medical rd 41 | Name | Consultant | Unit No.

DEPENDENCY

Washed by Nurse			
Bedpan/Commode			
Incontinent S/U			
FEEDING Self			
Assistance			
By Nurse			
TREATMENT			
Tube fed			
I.V. Infusion etc.			
Suction			
Oxygen			
Drainage(urinary or other)			
Pulse/Blood Pressure more than 4 hourly			
Peritoneal Dialysis			
Monitoring			
Special Nursing Care			
MENTAL STATE Normal			
Emotionally Disturbed			
Confused			
Unconscious			
READY FOR DISCHARGE	(Reason for continued stay after 48 hours to be noted in report).		
Home with/without Assistance			
Other Hospital			
On Geriatric Waiting List			
COLOUR BAR CODE	No colour – Group 1 unless under 12 years or over 75 then Group 2 Blue –Group 2 Three Green –Group 3 Two Green + confused or emotionally disturbed –Group 3 Red –Group 3 Special –Group (3) Two Green + over 70 years – Group 3		
Calculated Dependency			
Predicted Dependency			
Initials			

Dundee Medical Record 41	Name	Consultant	Unit No.

King's Fund
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