459.5	316.1	1.7	1.3	3.4	4.8	5.1	6.1
108.8	88.0	1.1	0.7	2.0	1.8	3.1	2.5
273.6	201.7	1.4	0.7	0.7	0.7	2.1	1.4
129.1	25.2	0.7	0.5	1.4	1.3	2.1	1.8
229.7	250.5	1.7	1.7	3.4	4.5	5.1	6.2
94.4	139.2	0.3	0.5	0.4	0.5	0.7	1.0
266.2	261.1	1.7	[illegible]	4.1	3.4	5	[illegible]
[illegible]	[illegible]5.9			0.4	0.6		

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Medical Servi[illegible]e St[illegible]istics

1 Resource Availability

Specialty	Catchment population for specialty	Available beds per 100 000 population	
		Group	Region
General Medicine	148 000	66.3	66.8
Paediatrics	148 000	20.3	13.3
Chest diseases	148 000	47.0	26.2
Geriatrics	148 000	116.7	75.6
General surgery	148 000	65.8	66.8
ENT surgery	285 000	10.5	13.1
Orthopaedic surgery	148 000	39.5	39.7
Ophthalmology	285 000	8.8	9.3
Obstetrics	118 000	42.4	36.9

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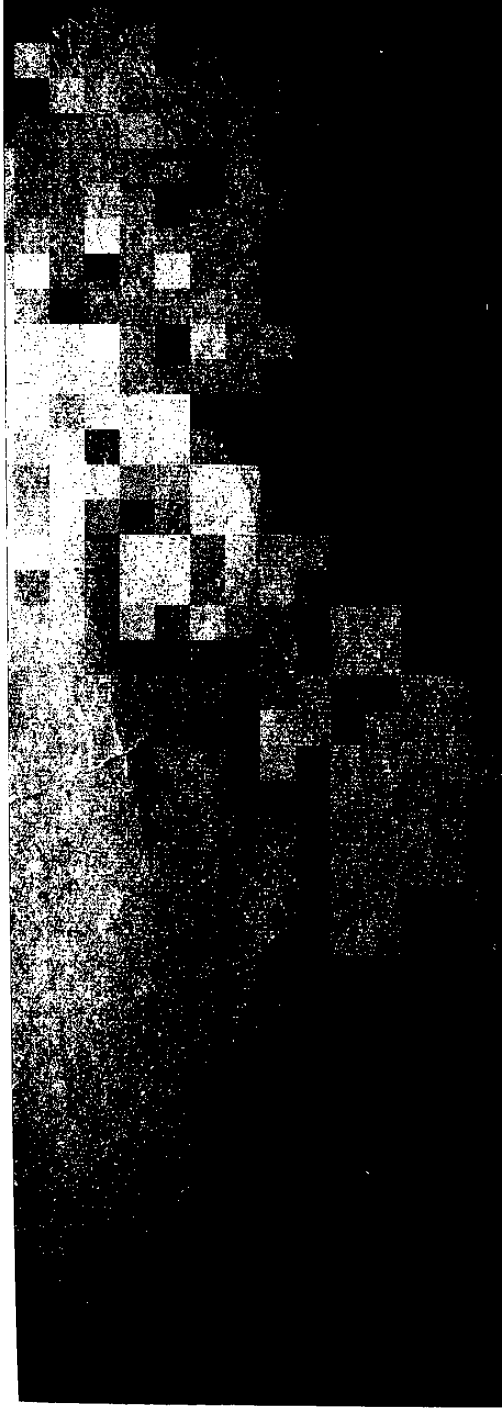

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cogstats

Some Notes on the Use of Statistics in the Divisional Management of Hospital Medical Services

by

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A Note on the Report and Its Authors

Cogstats originates from syndicate discussions during a senior management course at the King's Fund College in 1968. The members of the syndicate became interested in a health statistical project and submitted a report which was accorded favourable reception by the Department of Health and Social Security. A proposal for further studies by the syndicate was submitted to the Fund and a grant was made for the syndicate to continue as a working party. Charles Seccombe, a member of the directing and tutorial staff of the College, was associated with their studies throughout.

The members of the working party and their appointments during the time of their studies were:

David Morris MD MFCM DPH, principal assistant senior administrative medical officer, Newcastle Regional Hospital Board **Chairman**

T M Buckler, deputy secretary, The United Birmingham Hospitals **Secretary**

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Contents

INTRODUCTION

The use of statistical material in the management and development of all major industries and services is so well established as to have become indispensable. By now, the use of such material in the management and development of hospital and specialist services should no longer require justification.

With the progressive implementation of the ***First Report of the Joint Working Party on the Organisation of Medical Work in Hospitals*** (Godber or 'Cogwheel' report)[13], consultant staff throughout England and Wales are coming to play a greater part in the management of specialist services, and are thus required to consider and use statistical information to an increasing extent.

Perhaps the greatest difficulty encountered in using statistical material in the management of hospital and specialist services arises from the general inadequacy of the content of the material available, despite the undoubted achievements in the field since 1948. Although enormous quantities of statistical data are generated by the hospital service, until the introduction of Hospital Activity Analysis[1,10,22] the vast majority of the statistical returns made was instituted by the Department of Health and Social Security to provide central government departments with statistical information. It is true that at the inception of HAA an attempt to establish what data were required locally and regionally was made by DHSS when it invited hospital boards to participate in drawing up the items to be collected. However, the consultation appears to have been ineffective, as those who try to use statistics in the management of hospital and specialist services are obliged to collect most of the information they require by a process of judicious scavenging among the statistics collected for central government.

It might be argued that the local management needs for data are different for every hospital, and that the collection and collation of the data required by DHSS do not preclude the collection and collation of data required locally and regionally for management purposes. However, if the latter data were to be at all adequate, the magnitude of this additional task would impose an intolerable burden upon the staff now engaged in collecting and preparing statistical material. Moreover, as will be shown, local data only assume any relevance when they are submitted to valid comparison with other, similar data; thus, the design and implementation of a management information system must be undertaken on a national scale, and not left entirely to local initiative.

To say that the statistics collected from the hospital service are not intended primarily for management does not imply that they cannot be used effectively for this purpose. To dismiss all hospital statistics as worthless because of their many deficiencies would be a philosophy

of despair. Only when the available statistical material is generally used to the limits of its capacity will it be possible to identify the further detailed information required for the management of hospital and specialist services.

One of the benefits likely to accrue from the 1974 reorganisation of the health services in England and Wales[6,20] will be the increased use of statistical and epidemiological data in the rational and co-ordinated development of community health services. The fact that a wider view of health service planning and development will be taken in the future does not obviate the need to consider statistics relating solely to the hospital service. Although such clinical specialties as paediatrics, obstetrics, geriatrics and psychiatry will rapidly extend their present orientation towards the community, eventually becoming community-based rather than hospital-based, a large number of other specialties will continue to be based primarily in the district general hospital. And, although greater efforts will be made in assessing whether the medical services provided meet the apparent needs of the communities served, there will remain the necessity to ensure that those services which are provided are managed efficiently. Thus, the use of hospital statistics in monitoring the management of specialist services will continue. It is to be hoped that the improved health services information system, likely to be developed for the new integrated service, will bring with it a substantial improvement in the available management information relating to hospitals.

This report has been prepared on the assumption that there is, and will continue to be, a need for consultant staff to use statistical material as an aid to their participation in the management of specialist services. The purposes of the report are

- to indicate to those unfamiliar with hospital service statistics the nature and extent of the information available
- to suggest methods of approach which may make the application of this information more profitable
- to attempt to rectify some of the misconceptions which have developed, regarding the use of hospital statistics.

No apology is offered for the fact that many experienced consultants and administrators will find the content of the report trite; the aspirations of the authors will be amply fulfilled if only a few readers acquire some knowledge which will increase their confidence in using statistical material for the improved management of hospital medical services.

1 SOURCES OF DATA

The statistical data available for hospital management may be regarded as originating from two main sources; those which are derived from within the hospital service, and those which relate to events outside hospitals but which are of immediate concern and relevance in hospital management.

EXTERNAL SOURCES

Most of the hospitals now in use in this country were built before the need for coordinated service provision was appreciated. As a result, at the inception of the National Health Service in 1948, some areas of the country, for example, Central London and Liverpool, were generously provided with hospital facilities, while other areas, such as East Anglia and the East Midlands, suffered from a comparative shortage. In envisaging a programme of capital development which would redress this imbalance, the then Ministry of Health promulgated the concept of the 'district general hospital' as an institution which would embrace a comprehensive range of specialist services and provide hospital care for a defined catchment population. With the fulfilment of this plan as the ultimate objective in hospital service development, it behoves those concerned with the management of specialist services to consider their particular hospitals as part of a service network, acting in concert with the other components of the health and welfare services for the benefit of the community. It is no longer appropriate to consider the hospital service as 'sufficient unto itself'; hospital management must take account of the community to be served.

In attempting to identify and collate the statistical data which provide the perspective of an individual hospital or group of hospitals within the community, it will be necessary to consider a variety of documents, such as the Registrar General's statistical reviews[19], periodic reports arising from the Censuses, annual reports of the Department of Health and Social Security[5], annual reports of medical officers of health, and publications of the Department of Employment including the monthly ***Gazette***[3], the Factory Inspectorate and local planning authorities. It is not suggested that all members of clinical staffs should use these documents routinely. However, it is essential that administrative officers should be sufficiently familiar with the content of current reports to be able to provide advice and guidance in management. The external data which require attention may be considered under the following headings.

Population

As will become apparent, it is necessary to identify the numbers of the catchment population and not merely the geographical area served, since those seeking hospital care frequently ignore convenient administrative boundaries. These data were generally prepared and reviewed periodically by regional hospital boards* on the basis of information obtained from the Hospital Inpatient Enquiry (HIPE)[11] and Hospital Activity Analysis (HAA).† The age structure of the population is relevant to the hospital service, in attempting to assess the relative demands which may be made upon the paediatric, obstetric and gynaecological, or geriatric services. The rates of growth or decline of population will clearly have consequences upon the future organisation and development of hospital services in particular localities.

One factor in population growth which is of special concern to hospitals is migration, particularly since the younger members of the population tend to be more mobile. There is a tendency to aggregation of young populations in new towns, and this may lead to elderly people remaining in poor accommodation without familial or social support. Another factor is immigration; many immigrants suffer from the effects of poor standards of public health in their countries of origin, effects which may be compounded by adverse social conditions in this country. In some of our larger cities, as much as 50 per cent of new notifications of tuberculosis are accounted for in the 10 per cent or so of the resident population who are immigrants from Asia; and the domestic environment of these immigrants may precipitate otherwise avoidable hospital admissions in obstetrics and paediatrics.

Vital Statistics

Although notoriously variable and unpredictable, the birth rate is of immediate and obvious concern to the hospital services. Similarly, the standardised mortality ratio and cause-specific mortality rates may indicate priorities for service development. The infant and perinatal mortality rates provide a comparative index of the consequences of certain adverse social factors and the efficacy of the paediatric and antenatal obstetric care available to the community, both at hospital and at home.

Industry and Economy

Local patterns of industry and economy may affect the hospital service in a number of ways. While they have not yet been eliminated, hitherto common industrial diseases, such as silicosis among coal miners and steel dressers, are nowadays more effectively monitored and prevented, and are therefore less prevalent. However, any area where there is heavy industry may anticipate substantial demands upon orthopaedic and accident services, as well as such related services as plastic surgery and physical medicine.

Industrial growth and decline may also affect the staffing of the hospital service. For instance, relatively high employment with a

* Before the 1974 reorganisation.

† See also pages 8–9.

preponderance of light industry renders the recruitment of portering, domestic and clerical staffs extremely difficult in parts of the Midlands; such difficulties are less apparent in those parts of the North East where the traditional heavy industries of coal mining and ship building are declining and unemployment is high.

Transport and Communications

With the rapidity of modern transport systems, no part of the country is immune from isolated incidents or outbreaks of communicable diseases no longer endemic in Britain. However, the potential danger of such outbreaks, and the need for effective contingency planning at hospital level, remain of greatest significance in the areas of major sea and air ports. In general, the international statistics relating to communicable diseases will be of primary concern to administrative medical staffs in central and local government. Notification of diagnosis of such diseases in any part of the country should, nevertheless, be regarded as an 'early warning' by hospitals concerned with the provision of accommodation for the care of such patients.

The proximity of major roads will be of concern to hospital authorities, both in the need to deal with a greater number of accident cases than might be anticipated from the resident catchment population, and in the necessity, also arising from the proximity of railways and airports, to maintain an effective plan for dealing with major disasters.

Other Health Services

Inasmuch as hospitals are only a part of the services providing health care to the community, the characteristics of other parts of the health and welfare services are of significance to hospitals. The levels of staffing of general practitioner services, as assessed crudely in the average size of GP lists, may have immediate consequences in the workload imposed upon hospitals. A further consequence may arise in small or isolated hospital units which are dependent upon general practitioners for medical staffing. Organisation in general practice, so as to foster the development of specialist interests, may lighten the workload of hospital outpatient departments; and use of locum and deputising services and emergency treatment services may increase the emergency admission rate.

Other components of the domiciliary health and welfare services often have significant effects upon the hospital service. Levels of provision of residential accommodation may facilitate or hamper the working of hospital geriatric and psychiatric services; and levels of nursing and domestic staffing will affect the rapidity with which hospital patients may be discharged, both directly and by their effects upon general practice.

Similarly, the local presence or absence of industrial medical and nursing services may significantly affect the workload for hospital outpatient departments, particularly accident departments.

It is not intended that the above should be an exhaustive list of external data relevant to the hospital service. Many other examples could be cited. The object is to illustrate the type of data which must be considered if those engaged in specialist service management are to obtain a realistic impression of the environment in which their hospitals are functioning.

INTERNAL SOURCES

At the inception of the National Health Service, there was no data-collection system generally applicable to all hospitals throughout the country, and local standards of data collection, preparation and presentation varied even more widely than at present. The evolution of the various statistical returns required centrally has imposed a degree of standardisation on the data collected, but there are still substantial and important areas within the hospital service which are not covered, or are covered only inadequately, by existing returns. Management of these areas of hospital work is at best superficial, and at worst non-existent. In order better to indicate the significance and value in management of the available statistical material, the more important of the statistical returns are considered briefly, with comments on their content and shortcomings.

Form SH3

This return[8], introduced in 1953, is the primary source of statistical data, relating to physical resources and patients treated, available centrally and regionally. A return is submitted annually in respect of each hospital, the content of all returns being collated by DHSS and subsequently made available as regional and national summaries. In recent years, the form has been modified slightly and now contains, for each clinical specialty, details of

- average daily number of beds available
- average daily number of beds occupied
- discharges and deaths during the year
- size of the waiting list at the end of the year
- average duration of hospital stay of patients
- annual bed turnover rate
- number of outpatient clinic sessions held
- numbers of outpatients, both new and total, seen during the year.

In addition, there are data relating to the use of hospital facilities by

paying inpatients and outpatients, numbers of births in obstetric units, the work undertaken by service departments such as radiology, physiotherapy and electrocardiography, and numbers of admissions of day patients and night patients.

Although recent modifications have improved the accuracy and validity of the SH3 data, the persistent failure to rectify various anomalies at an earlier stage suggests a lack of appreciation of the need for accurate statistics in hospital management. Among the most irrational of the long-standing anomalies which have been rectified recently were the instructions regarding calculation of the average bed availability, which did not allow for temporary 'borrowing' of beds between specialties, leading to the production of meaningless figures for such derived indices as the bed turnover rate and turnover interval. Another was the failure to acknowledge that a substantial number of patients have undergone investigations and treatment on a day-case basis in hospital wards and operating theatres, by the specific exclusion of such patients from the definition of 'day' patients. It should also be borne in mind that specialty headings, such as 'general medicine' may embrace a certain amount of work which might otherwise be allocated to other specialties; for example, the general physician with an interest in cardiology would probably have all of his activities recorded under 'general medicine'.

Among the undesirable anomalies which remain are the irrelevant dichotomy of data relating to ear, nose and throat surgery into 'tonsils and adenoids' and 'other'; the failure to rationalise the presentation of outpatient statistics in orthopaedic surgery so as to permit production of useful information regarding 'referred' orthopaedic patients, as distinguished from 'fracture clinic' patients; and the inadequate data relating to the use of such inpatient facilities as day beds and pre-convalescent beds, which obscure the patterns of resource utilisation by particular specialties.

Form SH3 contains a wealth of statistical information, essential to constructive hospital management. However, until the form is further modified to take full account of contemporary patterns of hospital service provision and use, some of the SH3 data and many of the indices derived from them regionally and nationally will remain open to challenge.

HIPE and HAA

HIPE (Hospital Inpatient Enquiry) was developed during the 1950s, and by 1957 covered all non-psychiatric hospitals in England and Wales. The object was to collect data about the illnesses of patients admitted to hospital, and about the hospital services in terms of the patients and their illnesses. This was achieved by collecting data relating to a systematic 10 per cent sample of patients leaving hospital, including such particulars as age and sex, the hospital and unit to which the patients were admitted, the dates of admission and discharge, the source of admission and method of disposal, the area of home residence, the consultant responsible for their care, and details of the diagnoses and operations performed. The returns are processed by the Office of Population Censuses and Surveys (formerly the General Register Office) on behalf of DHSS, and published in annual reports.

Inevitably, these annual reports are a mass of statistical information, much of which has been used in academic studies concerned with such topics as community morbidity and differing regional patterns of hospital use. However, the system was not primarily designed for use in hospital management, and this, together with the fact that the data have never been published less than two years after their collection, precludes their general application in hospital management.

To overcome the problems of delay in processing data and the potential inaccuracies of a 10 per cent sample, HAA (Hospital Activity Analysis) was developed during the early 1960s. This provides the same data as HIPE, but relates to all patients discharged, the data being collated and processed regionally rather than centrally. It is thus theoretically possible to provide a rapid feedback of information to clinical and administrative staffs.

This system provides a great deal of valuable data for medical service management. It permits presentation of distributions of duration of stay and numbers of beds occupied, supplementary to the averages available from the SH3 data; information relating to the time patients have been on waiting lists; data relating to the source of admission and method of disposal of all patients; the distribution of delay between admission and first operation; and diagnostic data as detailed as the international classification will allow. All of this information can be classified by the sex and age of patients, the hospital, ward, specialty and consultant concerned.

The main criticisms to which HAA is open stem from its direct development out of HIPE. It fails to provide much of the information required by those concerned with service management; and it does not include sufficient clinical information to be immediately attractive to all consultant staff, despite the provision for six diagnoses and four operations. Because it does not yet deal with psychiatry, obstetrics, or any outpatient services*, it ignores more than half of all hospital activity, and its title must be regarded as a pretentious misnomer. The paucity of clinical information has led to its being regarded, in many centres, as no more than a sophisticated and expensive diagnostic index, facilitating the identification of particular patients for whom clinical data can only be obtained from case records. However,

* DHSS has carried out trials on obstetrics data and on outpatient data.

further study is clearly required into clinical data needs, and it may be useful to point out to medical executive committees that there is some space for special data in the unstructured section of the standardised medical record form HMR1 (IP). Before the full potential of the system can be realised, radical modification is essential. It will be necessary to extend both the management information and the clinical details, if the needs of both administrative and clinical staffs are to be met.

Regarding the possible use of HAA data by medical staff, DHSS issued a guidance circular in 1969.[10] This document indicated the potential value of the data for answering ad hoc statistical enquiries and stressed that due regard should be paid to simplified presentation and the preparation of summary tables, with a commentary drawing attention to salient points and likely trends. However, the circular also recommended that consideration should be given by hospital boards to the inclusion of certain specified data. The data listed were, in fact, little more than a catalogue of possible classifications, some of which would have little, if any, practical application. Until medical staffs become more generally conversant with the use of statistical data, it may be preferable severely to restrict the routine output from HAA, presenting only small amounts of data which have immediate relevance. Such information might include distributions of duration of stay for common diagnoses or operations, distributions of delay between admission and operation, specific diagnostic and operative mortality rates, and the proportions of patients admitted as emergencies. The information should be presented so as to allow the individual consultant to draw comparisons between his own situation and that of colleagues both locally and regionally. In parallel, regional data-processing facilities should be such as to deal rapidly with any reasonable ad hoc enquiries which may arise from the few aficionados of HAA.

Psychiatric Hospital Data

The psychiatric equivalent of HAA is the Mental Health Enquiry (MHE)[9], which has been in operation in its present form since 1964. On 31 December 1963, a census of all patients occupying mental illness or mental subnormality beds, irrespective of whether these beds were in general hospitals or psychiatric hospitals, was undertaken. Thereafter, every psychiatric admission and discharge has been recorded in statistical returns to DHSS with certain information relating to the patient concerned.

The information recorded is broadly similar to that collected for HAA; notable differences include details of the legal status of the patient and, in the case of mentally subnormal patients, details of intellectual status and nursing dependency.

As well as processing the information on these returns, to produce its periodic reports, DHSS returns to each regional hospital board the data collected from its region, on punch cards or magnetic tape. In theory, this permits processing and presentation of data at regional level, supplementary to the information contained in the Department's reports.

MHE is subject to similar criticisms to HAA, being a data-collection system designed fundamentally for the benefit of DHSS rather than the hospital service. One of the striking developments in hospital psychiatric care during recent years has been the symptomatic control of various forms of mental illness by chemotherapy. This has transformed the pattern of hospital experience of many patients from prolonged periods of institutional care into short spells of intensive treatment, repeated as frequently as is dictated by the condition of the individual patient. Although this development is of considerable significance in the management and development of hospital psychiatric services, the information made available to regional hospital boards does not allow any investigation of the pattern of readmissions of individuals or groups of patients, because a unique identification system is not used, so there is no method of linking the records of particular patients.

If the content of HAA were to be refined and extended to increase its value in service management, it would be extremely desirable to apply the same data-collection system to psychiatric units throughout the country.

In addition to the data regarding resources and activities, which are collected and collated in Form SH3, psychiatric units submit supplementary information in Form SBH112, covering items such as special units, size of dormitories, medical teams, work undertaken by patients, educational, social and vocational training, day hospitals and outpatient clinics, liaison with local health authorities and voluntary organisations, and the visiting of patients. Information from the SBH112 forms and other sources has been used by DHSS to prepare a number of special statistical reports relating to psychiatric services.

Staff Returns

The hospital service is a labour-intensive industry, some 70 per cent of total revenue expenditure being accounted for in salaries and wages. An extensive series of returns is required by DHSS from hospital authorities, providing information about all types of staff employed. In general, these returns indicate the numbers of staff in various grades who are employed at specified points in time, together with details of the 'whole-time equivalent' of part-time staff. These returns are collated by DHSS to produce annual statistical summaries of the various

types of staff employed throughout the service. The nature of the data collected and the way in which they are collected preclude any consideration of such essential parameters in personnel management as staff turnover rates or absence rates.

Financial Data

Two kinds of financial data are produced routinely by hospital authorities.

records of expenditure compared with funds allocated

costs of various services and departments, in terms of agreed standard units.

The allocation of funds to meet the running costs of hospitals, is still based on subjective subheads according to type of resource such as domestic staffing, medical and surgical equipment, rather than in accordance with the various services offered. However, consideration is being given to this question nationally, and it can be anticipated that a new system of financial allocation and accounting related to service provision will be introduced in the relatively near future. In the meantime, the statements comparing expenditure with money available under the various subjective subheads are not intended as an assessment of the efficiency of utilisation of financial resources. Their use is confined to the limited, but extremely important, function of containing expenditure within the amount available.

The statements comparing expenditure with the appropriate proportion of the estimate are usually produced at monthly intervals for each hospital and cover, in broad terms, the following subjective subheads

Salaries and Wages	Medical Nursing Building and Engineering Administrative and Clerical Professional and Technical Other Staff (domestic, portering, laundry etc)
Non-staff Expenditure	Provisions Uniforms Drugs Dressings Medical and Surgical Equipment Fuel, Light and Heat Maintenance of Buildings Domestic Renewals Other Expenditure (stationery, telephones, office equipment, rates, transport, etc)

The routine expenditure statements, in their present form, are often the subject of criticism on three counts. In the first place, much of their value can be lost if their production is delayed for any length of time after the end of the period to which they relate, thus reducing their effectiveness in enabling corrective action to be taken. Secondly, whilst salaries and wages can be accurately assessed, the other expenditure figures tend to be based on the level of invoices paid, omitting the cost of outstanding orders and goods delivered for which no account has yet been rendered. This results in the picture being sometimes considerably distorted; to correct it, many hospital groups are introducing a useful, but time-consuming, system of 'commitment accounting' whereby, as soon as an order is placed the appropriate cost is deemed to be expended. Finally, unless some measure of workload is shown alongside the estimated and actual expenditure figures, the comparison can be invalidated. For example, if the number of patients treated falls below the expected level, a saving on such headings as provisions and treatment costs would be incurred, rather than the estimate being fully spent.

The cost accounts produced by hospital authorities are an attempt to demonstrate, in terms which make comparisons with regional and national performances possible, the cost of running the various services which a hospital provides. The two principal cost statements produced annually for each hospital in the group are in respect of inpatient and outpatient costs, to which almost all the expenditure incurred in the hospital is eventually allocated. These statements demonstrate historically, for inpatient work, the detailed cost per inpatient week and the total cost per case; and, for outpatient work, the detailed cost per 100 attendances and the total cost per new outpatient. In addition, supplementary statements are produced showing the detailed costs of most of the departments which contribute towards the inpatient and outpatient cost figures, the cost units being related to the departments concerned; for example, catering, per person fed per week; building maintenance, per 1000 cubic feet; operating theatres, per operating hour or per operation.

DHSS publishes annually a digest, ***Hospital Costing Returns***, which provides detailed averages of inpatient and outpatient costs by region and nationally. Individual hospital authorities can compare their costs against these averages, and, more specifically, against those for other hospitals of the same type in regional summaries prepared by each regional hospital board. To make such comparisons

more valid, hospitals have been divided into the following types

Acute	over 100 beds
	50–100 beds
	1–50 beds
Mainly Acute	
Partly Acute	
Mainly Long-stay	
Long-stay	
Chronic	
Pre-convalescent	
Convalescent	
Rehabilitation	
Isolation	
Maternity	
Psychiatric (mental illness)	
Psychiatric (mental handicap)	
Orthopaedic	
Tuberculosis and Chest	
Children's Acute	
Eye	

The cost data can be subjected to a number of criticisms. Obviously, their accuracy, and therefore that of the averages derived, depend very much on individual hospital authorities consistently following the costing rules published by DHSS and ensuring that the accounting and statistical data from which the cost figures are derived are sound. There is evidence that this is not always done. One of the greatest difficulties encountered in applying the costing information to service management arises from the fact that, whereas the data relating to the use of resources are classified by clinical specialty or department, the costing data relate to entire hospitals in various categories. It is often asserted that, even within the existing groupings, hospitals are so individual in their nature that comparative cost figures can be regarded only as the roughest of indicators.

For these reasons, and perhaps because the cost data at present play very little part in the determination of revenue allocations, hospital authorities have made comparatively little use of them. However, for reasons which will be presented later, it is most important that the fullest possible use be made of the costing information, acknowledging its present inadequacies.

2 USE OF STATISTICS IN MANAGEMENT

In considering the application of statistical material to the management of hospital medical services, it is possible to define certain broad principles relating to the type of material likely to be most useful, and the frequency and method of its presentation.

Routine or ad hoc?

Where attempts are made to use statistical material in the rational and purposeful management of medical services, it is necessary to differentiate between information which is to be presented as a regular routine and that which is specially prepared to assist in the consideration of specific problems. It must be accepted that it is impracticable routinely to prepare and present detailed statistics which reflect every aspect of specialist service activity. Apart from the work which would be entailed in the preparation of such statistics, the volume of material so produced would be enormous, as would the task of giving its content serious consideration.

Statistics which are considered as a regular routine should give no more than a broad general picture of medical service activity. Where such routine statistics reveal unaccountable anomalies or irregularities, or where modifications in prevailing operational policies are under consideration, more detailed material should be prepared and considered on an ad hoc basis. Thus, in the routine consideration of bed utilisation statistics relating to general surgical units, it might be discovered that one unit is characterised by a low bed turnover rate, largely attributable to a protracted turnover interval.* An ad hoc study of this situation might, for example, reveal that 20 per cent or more of the patients summoned from the waiting lists failed to attend for admission when offered beds; this, in turn, might be found to be a result of insufficient notice of admission being given to some patients. Thus, the report of the ad hoc study would indicate the amount of notice given to patients, including the variations in this amount of notice attributable to the behaviour of individual consultants. However, it would be inappropriate to make the amounts of notice given to patients by each consultant a matter of routine statistical report.

The necessity to provide ad hoc data for consideration by specialist divisions or committees implies that the management activities of consultant staff must have adequate and immediate administrative support. In some instances, the required ad hoc data may be available from such existing sources as HAA; in others, it may be necessary to undertake special surveys. Whether such material is provided by officers of the present hospital management committees, regional hospital boards or boards of governors, or of the future area or regional health authorities, it is essential that the officers concerned are competent to identify the material required, and to execute the necessary special surveys.

So far as possible, information presented in routine reports should fulfil three criteria.

1 The information presented should be of immediate relevance to the activities of the group by whom it is to be considered.

2 The data should relate to entities which exhibit some degree of inherent statistical variation from one period of time to another, and this variation should be amenable to administrative control.

3 The data should be the subject of some form of routine data-collection exercise, either directly or by derivation.

Undoubtedly, there are statistical parameters which fulfil some of these criteria but which, because others are not fulfilled, cannot be considered routinely. Perhaps the best example of this within the hospital service is to be found in information relating to the use of operating theatres. In the surgical specialties, the use made of operating theatre sessions is of no less importance than the use made of beds or out-patient clinic sessions. Although many hospitals and hospital groups collect data relating to the allocation and duration of operating sessions, the absence of any general regional or national data-collection system precludes the effective routine monitoring of the use made of operating theatres throughout the country, and, because of the absence of data permitting comparison, precludes meaningful local consideration of such activities.

Volume of Data

One of the inherent dangers in the use of statistics, particularly where automatic data processing is involved, lies in the presentation of too much information. Most people who have used statistical material in this way will have encountered bulky statistical reports which may be totally irrelevant to the subject under consideration, or may contain important information which is obscured by an accompanying mass of undigested and indigestible data.

It is essential that the officers concerned with the preparation and presentation of statistical reports should structure the reports according to the needs of the consumers, both by careful selection of appropriate material, and by suitable presentation of the material, usually with a commentary, so as to draw attention to important points. Thus, a committee which is considering statistics of bed utilisation should not be presented with copies of Form SH3 or a massive computer print-out containing unedited HAA data; and it is improbable that a medical executive committee would wish to consider detailed analyses of statistics relating to engineering or catering services.

* See Bed Utilisation Statistics, page 17.

Comparisons

Basic statistics of the type collected in the hospital service have very little meaning in themselves; they are only of value for purposes of comparison. Since there are very few agreed standards of excellence in medical service management, routinely presented statistical material must necessarily permit valid comparisons to be drawn. This implies that the bulk of such statistical material will be presented in the form of rates or indices; and that the comparisons drawn will be between entities which have broad similarities.

While it would be inappropriate to compare the turnover rate of a geriatric assessment unit with that of an ear, nose and throat surgery unit, it would be quite reasonable to compare the turnover of one geriatric assessment unit with that of another, or with the regional average in units of this type. Similarly, it is reasonable to compare a unit's turnover for a particular year with those of the same unit for preceding years.

While such factors as variations in 'case-mix' (that is, the types and diagnoses of patients admitted) may affect statistics relating to units of the same type, the effects of such factors are often attenuated or eliminated where a sufficiently large sample is considered. Thus, variations in case-mix between two similar units may be strikingly apparent if data relating to one month are considered, but will be much less obvious where data relating to a year are considered. Where such factors are shown, as a result of ad hoc investigation, to account for gross differences even in large samples of data, they are obviously a matter of concern in service management.

Because of the necessity to draw comparisons, much of the statistical material routinely used in hospital management has to be presented as rates or indices which facilitate comparison. It is meaningless to compare, for instance, surgical unit A, which discharges 2000 patients during a year, with surgical unit B, which discharges 2500 patients in the same year, unless it is also shown that unit A has 70 beds while unit B has 90 beds. These data should be presented in index form as annual bed turnover rates, 28.6 patients per bed per year in unit A against 27.8 in unit B.

Frequency of Presentation

The frequency with which particular items of routine statistical information are presented should be related directly to the urgency of the management action required by them. Thus, data relating to delays in effecting non-urgent outpatient appointments might be considered quarterly, if there is any possibility of increasing the rate of attendance of new outpatients.

On the other hand, it is probably unnecessary to consider statistics of bed utilisation any more frequently than once each year, if such administrative action as the re-allocation of beds between specialties is not considered feasible; or on a quarterly basis, if seasonal re-allocation between medical and surgical specialties is an accepted administrative procedure.

Interpretations

Where statistical comparison reveals anomalies or deficiencies, there is sometimes a tendency to present specious explanations which will account for the apparent shortcomings. It is rarely found that such explanations have a basis in known fact; at best, their foundation rests upon subjective impression, and at worst they may be no more than an attempt to save face with the most plausible excuse. For this reason, the call for an immediate explanation of statistics which are considered to be comparatively unsatisfactory is usually fruitless.

If statistics are used to monitor management efficiency in this way, those who are required to account for their performance must be given sufficient time to find factual answers to specific questions. Thus, in many instances, statistics presented in routine reports may be the starting point for detailed ad hoc studies which may, in turn, be the basis of modifications in service planning, levels of resource provision or operational policies.

Applications

In applying routine statistics to medical service management, it may be helpful to use the statistics to answer three questions in turn.

1 What resources have we at our disposal?
2 What demands are made upon these resources?
3 How effectively are we using the resources?

In the next chapter, statistics relating to various aspects of medical service management are briefly considered in this way. Statistics relating to bed utilisation are dealt with separately.

3 MEDICAL SERVICE STATISTICS

RESOURCES

By tradition, the single most important resource of the hospital service has been the bed. Although the significance of this resource has been a matter of debate for some years, there is no doubt that it is still important, and in those geographical areas where hospital service provision is manifestly deficient, this deficiency is most immediately apparent in terms of bed provision.

In certain specialties, however, such as venereology and dermatology, most of the treatment is now undertaken in outpatient clinics. This tendency is extending into other specialties, such as paediatrics, in which it is now considered preferable to treat patients at home, rather than in hospital. Similarly, the greater use of outpatient investigation and treatment, particularly in surgical specialties, has led to a decline in the importance of the bed and a concomitant increase in the importance of other resources. Nevertheless, the bed remains the primary resource unit for hospital inpatient care, and the necessity to ensure that this resource is used effectively is the reason why bed utilisation statistics are dealt with at some length in the succeeding section.

With the increasing pace of inpatient and outpatient activity, and the progressive sophistication of medical investigation and treatment, such other physical resources as operating theatres, diagnostic radiology services, and pathology laboratories, have come to assume greater prominence. So much so that, in some instances, deficiencies in these supporting services may be the obstacles to further improvements in the overall use of hospital services. In this situation, it is particularly unfortunate that meaningful statistical quantification of the availability and use of these resources is rendered impossible by the data-collection systems currently in operation.

In the case of radiology departments, the units of work undertaken during a year are indicated on Form SH3 for the hospital concerned; for laboratories, annual statistics are collected on Form SBH6.[7] In both cases, the units recorded are 'weighted', and the method of weighting has been subject to extensive criticism, rendering the statistics produced of little practical value. In the case of radiology, the recent revision of the procedures for calculation of work units has produced a more generally acceptable means of assessing workload. However, in neither type of service is any attempt made to assess the actual resource available, in terms of the capacity or capability of a particular department. Although levels of staffing may be ascertained from the appropriate staffing returns, the workloads that individual departments are capable of are largely determined by the type of equipment in use. The absence of any general information regarding these important and expensive resources leads to the situation in which the possible effects of these supporting services upon activities in the main clinical specialties can only be assessed on the basis of ad hoc studies. The same is true regarding the use of operating theatres.*

* See page 17.

The most important resource of the hospital service is manpower; any deficiency immediately exerts an influence upon the level of service which can be provided. Although data relating to the numbers of staff in post are generally adequate, the increasing application of the techniques of personnel management to the hospital service has revealed the need for much more information on the recruitment, training, and turnover of personnel.

In the context of medical service management, the manpower statistics of most immediate concern relate to medical staffing. It cannot be denied that specialist services are extensively dependent upon other types of manpower, particularly nursing staff, professional and technical staff, and secretarial staff; and, where changes in medical service policy or priorities have direct consequences upon these staffs, ad hoc consideration of appropriate statistical material is essential. However, routine consideration of statistics relating to these types of staff is more properly the concern of nursing or general administrators or of consultants responsible for particular service departments, than of medical executive committees.

In quantifying those resources about which valid statistical information is available, it may be desirable to express quantities in absolute terms. However, in order to facilitate the necessary comparisons, it is essential that these resources should also be related to the populations served; thus, routine statistical statements should indicate the available beds, outpatient clinic sessions, and medical staff in various grades, per 100 000 of the catchment population. In certain service specialties, where the resources are used for the benefit of other specialties rather than the population directly, it may be appropriate to relate the resources to other parameters within the hospital service. Thus, levels of anaesthetist staffing may assume greater relevance when related to the levels of surgical staffing, as in the ratio of surgeons to anaesthetists, both expressed in terms of whole-time equivalents.

Demand

On occasion, there is a tendency wrongly to equate the demand for medical care with the need for it. In general, **demand** is a reflection of the attitudes of the community towards morbidity; **need** is a reflection of the judgment of the medical profession.

In certain instances, demand and need are identical. With such acute surgical emergencies as perforated duodenal ulcer or acute appendicitis, there are few occasions when the attitude of the public would be in conflict with the judgment of the profession. This is not to say that patients with such conditions obtain the hospital care which they require without delay. Unfortunately, there are 'unpopular' conditions

such as cerebral haemorrhage and broncho-pneumonia, particularly in elderly patients, where delays in emergency admission sometimes occur.[4,23] Any such delays are of immediate concern in specialist service management, and should be the subject of regular review, especially during the winter months, when the demand for admission of medical emergencies may increase.

Inasmuch as the need for hospital care can only be assessed after the patient has been seen by the doctor, and the judgment of need is not necessarily corporate or constant within the medical profession, it is desirable that hospital medical services should be so managed as to be able to meet expressed demand.

It is rarely possible directly to assess the demand for hospital care; only in the specialties where there has been a progressive decline in workload, such as chest diseases and infectious diseases, and in a few local situations where levels of resource provision and utilisation are high, is it certain that the service provided is adequate to meet the demands made upon it. Much more frequently, it is necessary to attempt some sort of judgment, by assessing the manifest demand which a particular service is able to meet, and considering such evidence as exists that the service may be failing to meet demand.

In this context, two useful indices are the admission rate and the outpatient referral rate; that is, the numbers of patients admitted per 1000 of the catchment population served and the number of new outpatients referred per 1000 population. Both of these rates reflect the interaction between the demand for services and the extent to which the service is able to cope with this demand. In this way, they indicate the level of service provided to the community. When the rate is low, it may be that the demand for the particular service is also low. More frequently, however, low admission and referral rates are suggestive of some inadequacy in the service provided, and further evidence for this possibility will be found in delays in the provision of the service. In the case of admissions, the inadequacy in the service provided will be apparent in delays in securing emergency admission (as indicated above), or in lengthening waiting lists. In the case of outpatient clinics, there will be a prolonged and increasing interval between referral by the general practitioner and consultation at the hospital.

Admission and referral rates found to be unusually high by comparison with similar specialties elsewhere may be accounted for in that it is possible to create demand for one specialty when another, related, specialty is working under pressure. Thus, it is not unknown for general practitioners to refer gastro-enterological conditions to surgeons if there are delays in effecting consultations with physicians, and vice versa. A more common explanation for a high admission or referral rate may be an incorrect assessment of the catchment population. Particularly in urban areas, the hospitals selected by patients and their general practitioners may vary considerably from time to time, so that frequent reviews of the populations served by particular specialties and hospitals are necessary.

Among the statistics most frequently presented in the hospital service are those which relate to waiting lists, both for outpatient consultation and for admission. These data are important, indicating, as suggested above, possible areas of unmet demand. If the number of patients on the waiting list is to be considered, it is desirable to relate it to the population served, once again to permit comparison. Thus, an admission waiting list of 1000 patients drawn from a population of 500 000 may be less significant than an admission waiting list of 500 patients drawn from a population of 200 000.

Far more significant than the number of patients waiting is the length of time that each patient has to wait. Thus, an admission waiting list of 200 patients will be less significant if all patients will be admitted within two to three months, than a waiting list of 100 patients, half of whom will wait more than a year for admission. Statistics relating to waiting lists should give a clear indication of waiting times. In the case of delays for outpatient consultation, it may be sufficient to indicate the average extent of the delay at a particular point in time. For admission waiting lists of any magnitude, it may be more appropriate to indicate the proportions of patients on the waiting list who have been waiting for specified periods, for example, up to one month, one to six months, six to twelve months, and over twelve months.

Where data relating to emergency and waiting list admissions are available, it is possible to calculate the average waiting time, or 'formal waiting period', in weeks.

$$\text{average waiting time} = \frac{\text{number of patients on waiting list} \times 52}{\text{number of waiting list patients admitted during year}}$$

The use of this formula assumes a fairly constant level of bed turnover, and the average waiting time so derived takes no account of the relative priorities which are normally accorded to waiting list patients. In general, it is preferable to indicate waiting times for admission as percentage distributions.

Utilisation

Because of the deficiencies of data-collection systems within the hospital service, the only components of medical services where resource utilisation is amenable to routine statistical assessment are inpatient activity and outpatient activity. The assessment of

activity, in the form of bed utilisation statistics, is dealt with in the next chapter.

In the statistical expression of outpatient activity, it is desirable to indicate the relative amounts of the workload which are accounted for in new patients and in return attendances. Thus, the average numbers of patients attending at each clinic session should be separated into new, return, and total attendances. Assessment of this breakdown is further facilitated by calculation of the ratio of return to new attendances.

Some assessment of the utilisation of medical manpower resources can be achieved by relating workload levels to available staff, both in inpatient and outpatient activity. Thus, the calculation of admissions (or discharges) per consultant, broken down into emergency and other types of case, and outpatient attendances per consultant, may constitute the basis of useful comparative data.

4 BED UTILISATION STATISTICS

Few topics in medical service management provoke more heated debate than statistics relating to the use of beds. This is very often so because the wrong statistics are prepared and presented for consideration, or the wrong conclusions are drawn from the statistics presented. Bed utilisation statistics form some of the most important numerical data which can be used in medical service management, and it is desirable that those who wish to act upon these data are fully aware of their sources and significance.

Derived Indices

Of the basic data collected by hospital records offices and collated in Form SH3, three items are used for the derivation of the indices of bed utilisation. These are

the average daily number of beds available
the average daily number of beds occupied
the number of discharges and deaths.

In describing the indices, it will be assumed throughout that the data under consideration relate to one calendar year. Indices relating to shorter periods can be derived, but necessitate an appropriate adjustment in the method of calculation. The three most important indices are as follows.

1 **The mean duration of stay** is derived by dividing the total number of occupied bed days by the number of discharges and deaths during the year.

$$\text{mean duration of stay} = \frac{365 \times \text{average of occupied beds}}{\text{discharges and deaths}}$$

This formula can be used to calculate the mean duration of stay in all hospital units except those characterised by a very long duration of stay and a very low turnover, such as some long-stay geriatric units. In units such as these, it is more accurate to use a mean duration of stay based upon the observed experience of the patients concerned.

2 **The turnover interval** is the mean number of days during which each bed stands empty after the discharge of one patient and before the admission of the next. Where data relating to vacant beds are collected, this index may be derived by dividing the total number of vacant bed-days by the number of discharges and deaths. More commonly, it is derived from the data relating to available and occupied beds.

$$\text{turnover interval} = \frac{365\,(\text{average of available beds} - \text{average of occupied beds})}{\text{discharges and deaths}}$$

3 **The bed turnover rate** indicates the use made of available beds, by expressing the mean number of patients 'passing through' each bed during the year.

$$\text{bed turnover rate} = \frac{\text{discharges and deaths}}{\text{average of available beds}}$$

Relevance of Indices

Since the primary object of hospital service management is to use available resources for the benefit of as many patients as possible, the bed turnover rate is probably the most important of the bed utilisation indices, being the 'productivity index' for hospital inpatient care. There is a limit to the extent to which industrial methods and outlook may reasonably be applied to the management of medical services, and the adoption of productivity norms would be undesirable. However, the larger the number of patients treated per bed in a given period, the greater the benefit to the community, provided individual patients receive adequate treatment.

Where the bed turnover rate of one hospital department is found consistently to compare unfavourably with other, similar departments, a closer examination of the internal administrative procedures is indicated. A good reason may be discovered for the apparent deficiency; for instance, a longer mean duration of stay may indicate that the department specialises in certain types of patient, or a prolonged turnover interval attributable to shortage of operating theatre facilities in a surgical specialty. However, if the consideration of bed utilisation statistics is intended as a guide to active management rather than as a process of passive observation, any department which regularly exhibits comparatively low bed turnover rates should be investigated with a view to administrative improvement.

While many factors influence the length of time that a patient remains in hospital, the interval between admission and discharge is ultimately determined by the senior medical staff. For this reason, attempts to increase bed utilisation by shortening the mean duration of stay will probably encounter greater obstacles than similar attempts based upon reduction of the turnover interval. Since medical staff must bear the ultimate responsibility for the welfare of patients, it is not unreasonable that some may regard with disfavour any intervention by their colleagues or, particularly, by administrators in this aspect of hospital care. Where it can be shown that time is being wasted, through poor organisation of inpatient investigations, unnecessary delays between admission and the institution of treatment, or protraction of hospital stay for non-medical reasons, there may be strong arguments in favour of administrative intervention. In most instances, however, administrative officers and committees should be concerned with the mean

duration of stay only in so far as it may have a bearing upon the other indices of bed utilisation.

The fact that the mean duration of stay need not be of paramount interest to administrators does not absolve senior medical staff of the responsibility for constant and critical review of this index. If it is discovered that the mean duration of stay is unnecessarily extended for any of the reasons given above, the matter should be discussed with the hospital administration as a matter of urgency. Using data derived from HAA, individual consultants may profitably consider the distribution of duration of stay of their own patients in specific diagnostic or operative groups, comparing their own performance with that of colleagues in the same specialty.

The turnover interval gives a direct measure of the wastage occurring in the utilisation of hospital beds. When a comparatively long turnover interval is encountered, the wastage which it indicates may be attributed to any of three factors.

a low level of demand for inpatient care

inadequate supporting facilities, such as operating theatres, radiology or pathology, are affecting bed utilisation

the wards or departments concerned are not being administered efficiently, particularly in relation to admission procedures.

In the British hospital service, where most specialties carry a waiting list, indicating a measure of unmet demand, the possibility of long turnover intervals arising from low levels of demand may be largely discounted. Only in a few declining specialties, such as infectious diseases, does this factor prevail. In such situations, there is a clear case for closure or re-allocation of some of the beds. In general, the length of the turnover interval in British hospitals may be construed as an indication of the standard of supporting facilities or internal management, both of which may call for administrative action.

The turnover interval is, perhaps, the only index of bed utilisation concerning which administrative bodies may adopt uniform standards, applicable to all hospitals and departments. There is no reason why a geriatric unit or a long-stay orthopaedic unit should exhibit a longer turnover interval than a general surgery or an ENT surgery unit. Only very rarely is it possible to justify a turnover interval exceeding 3.0 days. Many of the busiest hospital units in this country achieve turnover intervals appreciably lower than 3.0 days, but long turnover intervals are often found in units admitting a high proportion of waiting list patients, where it should be possible to organise more effective utilisation of beds.

Where reduction of long turnover intervals is prevented by shortages of personnel or material, administrative bodies will be faced with the alternatives of re-allocating resources or allowing deficient utilisation to continue. Where it is necessary for such deficient utilisation to continue, it is preferable that it should result from positive decision rather than unconscious omission. If it were considered that the increased workload entailed in reducing the turnover interval would impose an intolerable burden upon staff, there would be an indication for closure or re-allocation of beds, in order to match the optimal utilisation of resources to the work potential of the available staff.

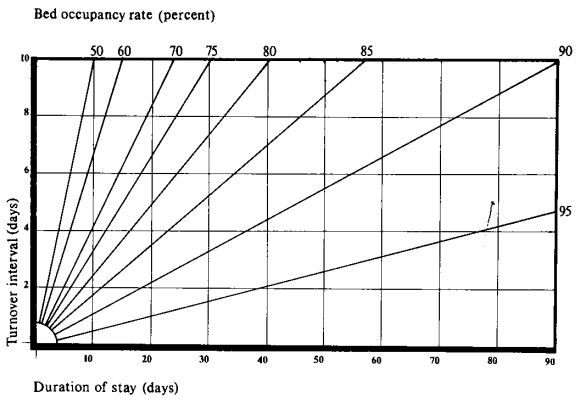
In attempting to reduce prevailing turnover intervals, it is necessary to ensure that this is not achieved simply by increasing the mean duration of stay. It is thus necessary to consider together trends in the mean duration of stay and the turnover interval, to see whether developments in these respects are leading towards the desired primary objective, increases in the bed turnover rate.

There is no single index which can be used as a measure of the efficiency of bed utilisation. In assessing bed utilisation, it is necessary to consider the three indices, mean duration of stay, turnover interval and bed turnover rate. Potential reduction in the mean duration of stay will be the primary concern of clinical staff; administrative staff should endeavour to minimise the turnover interval; and all concerned with hospital management should pursue increasing bed turnover rates.

Bed Occupancy Rate

The bed occupancy rate, or percentage bed occupancy, has certain restricted applications in hospital planning and in provisioning, but is of no value as an index of bed utilisation. As may be seen from the accompanying Figure, a given bed occupancy rate may arise with any value of mean duration of stay, depending upon the magnitude of the turnover interval. Thus, a bed occupancy rate of 80 per cent may be achieved where the mean duration of stay is 4.0 days and the turnover interval, 1.0 day; or where the mean duration of stay is 20.0 days and the turnover interval, 5.0 days. Where standards of bed occupancy are adopted for administrative purposes, different hospital departments may be expected to achieve an unattainable goal or allowed to idle along with unnecessarily empty beds, depending upon the mean duration of stay characteristic of the patients. If, for instance, the standard of 90 per cent were adopted by a hospital authority, ENT surgery units, where the patients might have a mean duration of stay of about 4.0 days, would have to keep their turnover intervals below 0.4 days—an impossible task. On the other hand, geriatric units with a mean duration of stay exceeding three months could afford to let their turnover intervals rise above 10.0 days.

Relationship between bed occupancy rate, mean duration of stay, and turnover interval



Another undesirable feature of preoccupation with the bed occupancy rate is that medical and nursing staffs can increase the rate at the expense of bed utilisation efficiency. The classical illustration of this is the ENT surgery unit which admits two groups of children each week for tonsillectomy, each child remaining in hospital for a period of 48 hours. This is a common procedure which has extended into many other specialties, enabling the treatment of large numbers of patients requiring minor surgical procedures. However, in the unit cited, the bed occupancy rate is only 57 per cent. If pressed to achieve a higher bed occupancy rate, the medical and nursing staff could increase the figure to 86 per cent merely by keeping each patient in hospital for three days instead of two. Nobody would benefit from this manoeuvre, and the deployment of staff to look after patients who do not require hospital care would be positively wasteful. Striving to increase the bed occupancy rate, without sufficient consideration of the other factors involved, may lead to this type of inefficiency. It is economically preferable to have beds empty than to have them filled uselessly. The objective in bed utilisation is not to fill beds, but to ensure that they are used for the benefit of as many patients as possible.

5 FINANCIAL STATISTICS

It is becoming increasingly accepted that the interpretation and utilisation of financial data are no longer mysteries to be left entirely in the hands of treasurers, but are integral parts of the informal decision-making processes which should be taking place continually in all sections of hospital organisation. The development of the 'Cog-wheel'[13] and 'Salmon'[18] structures of organisation is resulting in the evolution of new management organs ideally suited to take decisions in resource utilisation in vital areas of the hospital. To enable them to undertake this task, prompt, accurate financial data, meaningfully presented, are essential.

FINANCIAL RESOURCES

The overwhelming bulk of the financial resources available to a hospital authority for running its services is contained in its annual revenue allocation which a hospital management committee receives from the regional hospital board or which, in the case of teaching hospitals, a board of governors receives direct from DHSS.*

Containing expenditure within the annual revenue allocation appears to be a most negative form of financial exercise, but it is most important to the whole organisation for a number of reasons.

1 Hospital management committees and boards of governors are entrusted with very large annual sums of money, varying from perhaps £2 million to nearly £10 million for the very largest authorities. Considerable discretion is given in the utilisation of these funds, and in return it is incumbent upon each appointed authority, and its senior advisers in all disciplines, to demonstrate an ability to manage its affairs, and that it is a responsible authority which could be entrusted with further development funds.

2 Revenue funding is usually based on the level of service in the previous year, as reflected in the revenue allocation, plus an addition for developments. If, therefore, expenditure in the previous year has exceeded the allocation, it will be necessary to devote a part, or even the whole, of the development increase merely to cover the current rate of expenditure. The resulting slowing down of development will be a source of frustration and lowering of morale throughout the group.

3 It is necessary also to pay regard to, and correctly interpret, under-spendings. Particular care should be taken where a part of allocation to a particular subhead (for example, medical and surgical equipment) has been held back to form a reserve. These funds should be released as soon as the general financial picture indicates that it is safe to do so, as in no circumstances can revenue money unspent in one year be carried forward to the next. Under the revised budgetary control system, which will operate after reorganisation of the health services, it will be possible to carry forward unspent revenue balances into the following financial year.

The appropriate financial statement for the purposes of revenue expenditure control is the periodic comparison of the expenditure, under the various subjective subheads, with the proportion of the allocation for the period. Together with other management groups in the organisation it is advisable for the medical executive committee to see the full statement, so that the headings of expenditure over which the medical staff can exercise particular control (medical salaries, drugs, dressings, medical and surgical equipment and patients' appliances) are seen in context. The subheads of particular interest should also be set out separately in a manner (perhaps geographically) which demonstrates the expenditure trend. It is essential for the medical executive committee to be involved in the compilation of forecast estimates, and in the half-yearly revision of current estimates.

Demand

As with medical services the demand for financial resources must be distinguished from the need.* It is natural for departmental heads to wish to expand their departments to enable them to introduce new techniques or provide a higher level of service. However, it is essential that all developments should accord with the established policy of the hospital authority, and the financial consequences should be clearly determined in advance. Also, it is necessary to consider in financial terms such matters as equipment replacement programmes, and trends such as increased utilisation of beds and operating theatres.

Utilisation

Assessing the efficiency with which financial resources are used is most difficult, in a hospital context, as so many varying factors have to be taken into account, and the costing data ignore quality of service. However, the efficient utilisation of financial resources is of great importance for several reasons.

1 There is increasing demand for funds to finance developments arising from the introduction of new and improved medical techniques.

2 The historical and rather haphazard development of most hospital budgets has resulted in a lack of balance, with some services being over-financed and others short of funds. Cost accounts are one of the indicators which might point to this.

* This was the arrangement at the time of writing, before the reorganisation of the NHS

† See page 14.

3 Hospital revenue allocations are not at present related to need, but are based on historical factors such as the level of spending occurring during the early years of the National Health Service. However, it is inevitable that at some time in the future allocations will, in part, be based on some assessment of levels of performance. In fact, such 'norms' are already used by DHSS for the assessment of revenue allocations for major hospital developments.

Within the framework of the costing data currently available, the most appropriate presentation for a medical executive committee would be an annual comparison of inpatient and outpatient costs for the major hospitals in the group in respect of the previous year, compared with the corresponding regional and national averages, and accompanied by a commentary.

At best the costing figures can provide only a general indication that investigation is called for in a particular area. However, in the case of a hospital group, the national average against which comparison may be made is based on a very wide spectrum of several hundred hospital authorities. Teaching hospital groups are in a rather more difficult position as their national average reflects expenditure in only a small number of highly specialised and individualistic hospitals.

If it is determined that expenditure in one of the medical service areas should be investigated, it might be thought appropriate to set up a joint working party on which the medical division concerned and the treasurer would be represented. As a first step the working party might determine the exact composition of the cost figures and examine any ostensible reasons why a comparison with the regional or national average is not completely valid. Depending upon the outcome of this initial exercise it may be decided to select one or two hospital centres judged to be similar in size, organisation, and nature of workload, and to carry out a detailed comparative study.

STRUCTURE AND CONTENT OF REPORTS

Accepting that example is always more efficacious than precept, the following pages are devoted to illustration of the type of statistical material which might be considered by a medical executive committee. While it may be thought necessary, in many hospital groups, to expand upon the material presented in the example, these illustrative data are suggested as the type of information which should be available to all medical executive committees and are the minimum data requiring consideration.

Data presented relate to an imaginary group of hospitals and include a general description of the group, the medical service statistics for the group, and certain financial data which will be of interest to the medical executive committee.

The medical service statistics comprise data which might be presented annually, perhaps in the spring of the year following that to which they relate. As suggested earlier, parts of the content may be worthy of more frequent consideration; for instance, the delay in effecting non-urgent outpatient appointments in each specialty might be considered quarterly.

The statistics considered by clinical divisions might comprise similar data, but would indicate in greater detail such items as delays in outpatient appointments, structure of waiting lists, and workload statistics; the data presented should demonstrate the situation of individual consultants within divisions. In this instance, it would be appropriate to present information quarterly. In addition, each consultant should receive a limited amount of information from HAA*, to enable a critical appraisal of his own activities compared to those of his colleagues in the same specialty elsewhere.

Of the financial data, the statement of expenditure and proportion of estimates would probably be presented every two months, on a cumulative basis throughout each financial year. The costing information would be presented annually, probably in September.

Accompanying both the medical service statistics and financial data are commentaries highlighting salient features; it is assumed that such information would have been considered by the chairman of the medical executive committee and the group treasurer, before presentation to the medical executive committee.

* See page 8.

NEWTON AND DISTRICT HOSPITALS

NEWTON AND DISTRICT HOSPITALS

NOTES ON THE GROUP

The group comprises 680 beds, and is based upon the market town of Newton, situated on the eastern side of the Pennines. With the continuing closure of the local coal mines, the primary source of employment in Newton is now light engineering, although there is a substantial woollen mill in the town. The surrounding areas are almost exclusively agricultural, mainly arable around Newton, but predominantly sheep farming further up the Dale.

For most specialties, the catchment population is that resident in the catchment area, 148 000. In ENT surgery and ophthalmology, the group serves a neighbouring catchment area, so that the catchment population for these specialties is 285 000; and for obstetrics and gynaecology some 30 000 of the resident population seek hospital care in the neighbouring group, which has two obstetric units, one close to the catchment area boundary.

The main hospital in the group, at which the administrative offices are situated, is Newton War Memorial Hospital. Originally a voluntary hospital, it was built in the early 1930s. It contains some 60 beds for general medicine, 30 for paediatrics, 60 for general surgery, 60 for orthopaedics, 20 for gynaecology and 40 for obstetrics. It also has an active accident and emergency department, all of the outpatient facilities in the area, the group pathology laboratories and the group central sterile supply department. The operating suite, comprising four theatres, has been upgraded recently.

The County General Hospital was formerly an isolation and tuberculosis hospital. With the decline of activity in these specialties, it has been progressively handed over to the general specialties, although the chest physicians still maintain a precarious foothold with 70 of the 255 beds. Of the remaining beds, 40 are devoted to general medicine, 40 to general surgery, 30 to ENT surgery and 25 to ophthalmology. The surgical specialties are supported by two operating theatres. The remaining 50 beds, recently provided in a pair of new wards, constitute the area's geriatric assessment unit. Although this last unit makes extensive demands upon the hospital's x-ray department, certain special radiological investigations and all pathological work are undertaken at the Newton War Memorial Hospital.

Raven Grange Hospital is a former Public Assistance institution; the local health authority vacated their part of the premises some 10 years ago, their only remaining interest being vermin control in the vacated accommodation. The 130 beds in the hospital part of the buildings are devoted entirely to rehabilitative and long-stay geriatric care. There are small physiotherapy and occupational therapy departments, but no other special services are provided. The entire hospital is in very poor structural condition, the boiler plant and kitchens being virtually unserviceable. The hospital is due for closure in four years time, when a new block of 120 geriatric beds is due for completion at the County General Hospital.

Dale Cottage Hospital is in an isolated village some 15 miles up the valley from Newton. It is used by general practitioners and contains 15 medical beds and 10 maternity beds. With the depopulation of the valley, following the collapse of the lead mining industry, progressively poorer use has been made of Dale Cottage Hospital. But for the vocal opposition of the matron and the two local general practitioners, it would probably have closed some years ago.

COMMENTARY ON MEDICAL SERVICE STATISTICS

In this year's statistical report, the most obvious points for full consideration are :

a the continuing decline in the demand for, and use of, the chest diseases services

b the increasing waiting lists in ENT surgery, ophthalmology and gynaecology

c the continuing decline in the use of Dale Cottage Hospital.

General Medicine

In general, the situation in this specialty continues to be satisfactory. The only questionable point relates to the level of work in outpatient clinics. The number of clinic sessions now undertaken is perhaps rather higher than required. It seems probable that a similar number of outpatients could be dealt with by a small increase in the number of patients attending each session; a larger number of new patients could be seen at each session by reducing the frequency of return attendances. This matter should be considered in the light of the need to increase outpatient sessions in other specialties.

Paediatrics

The commendably high level of activity in this specialty reflects the enthusiasm with which the two consultants concerned pursue their divergent views of paediatric care. On one hand, the policy of admitting substantial numbers of patients for brief periods is pursued, while on the other hand the policy of dealing with the bulk of new patients on an outpatient basis is pursued with equal vigour. In consequence, the service deals with very large numbers of inpatients and outpatients, the only possible criticism

being the somewhat protracted turnover interval exhibited in the bed utilisation statistics.

Chest Diseases

As for some years previously, the level of activity in this specialty shows a further decline; serious consideration should be given to the question whether some of the resources allocated to this specialty should be re-deployed for the benefit of the other specialties. The numbers of beds and outpatient clinic sessions used are well in excess of the regional averages, although the withdrawal by the regional hospital board of a registrar post has substantially reduced the level of medical staffing. For the third successive year, there is no waiting list in this specialty and new outpatient referrals continue to decline. Examination of HAA data indicates that at least 25 per cent of the adults and 60 per cent of the children admitted might have been more appropriately dealt with in the specialties of general medicine, paediatrics and geriatrics. It would appear that some 20 beds and two of the outpatient sessions undertaken each week could be made available to other specialties without in any way curtailing the chest diseases service.

Geriatrics

This is the second full year of activity of the new geriatric assessment unit at the County General Hospital, and the inpatient turnover shows an increase of some 15 per cent over last year. While the opening of this unit has effectively brought the hospital geriatric problem in the area under control, and has facilitated activities in the other main specialties, the staff concerned report a strong impression that the intensive investigation of geriatric patients at the County General Hospital has imposed a substantial strain upon the radiology, pathology and physiotherapy services.

General Surgery

The slight reduction in inpatient activity and the substantial increase in the size of the waiting list in this specialty are undoubtedly attributable to the work now being undertaken to improve the operating theatres at the Newton War Memorial Hospital, which necessitated a reduction in surgical activity until April of this year. (It will be remembered that a similar pattern was apparent in gynaecology last year, during the earlier part of these improvements.) However, there is no apparent cause for the unsatisfactory situation with regard to outpatient activity in this specialty, and some effort must be made to increase the rate at which outpatients are seen, if only to eliminate the delay in effecting 'non-urgent' consultations.

ENT Surgery

Although there is an undeniable shortage of facilities and staff in this specialty, these shortages do not altogether account for the low level of inpatient and outpatient activity. HAA data indicate that some 50 per cent of the patients admitted in this specialty remain in hospital for three days or less. Because of this, the timing of operating sessions is now being reviewed in an effort to improve bed turnover by having the operating sessions of the consultant and registrar more evenly spaced during the week. While it is not possible to increase the number of operating sessions or outpatient sessions until the proposed new consultant post is established and filled, it is for consideration whether some improvement in the pace of activity of the existing outpatient sessions could be achieved.

Orthopaedic Surgery

It is very gratifying to be able to report the virtual elimination of waiting lists in this specialty; the vast

majority of patients are now given dates for admission and operation at the time of outpatient consultation, and only those patients who are unable to commit themselves to a booked admission within one month are put on the waiting list for subsequent communication. It should not be inferred that this situation reflects any reduction in the demand for orthopaedic services, as may be seen from the admission and outpatient referral rates. Rather, with adequate levels of consultant staff, and by continuing their high levels of inpatient and outpatient activity, the orthopaedic surgeons are now dealing with patients at the same rate as they arise in the catchment population. The consultants are now endeavouring to reduce the delays in effecting outpatient consultation, although it should be borne in mind that the interval between primary referral and operation is, for most patients, now less than two months.

Ophthalmology

As with ENT surgery, the pace of inpatient and outpatient activity in this specialty leaves much to be desired. The delay in seeing new outpatients may be suppressing the referral rate. Comparison with regional data suggests that this service could be improved, without any need to increase the resources available.

Obstetrics

With the cooperation of the county medical officer of health, a scheme of planned early discharge has been instituted in this specialty, and currently some 20 per cent of the patients admitted to the consultant unit at Newton War Memorial Hospital were discharged within 48 hours of delivery. Although the scheme has only been in operation for some five months, the effects upon bed utilisation are already apparent. Two additional antenatal clinics are being undertaken each week to permit the detailed assessment and supervision of patients selected for this scheme. It

should be noted that the hospital confinement rate in the area has now increased to 86 per cent.

Gynaecology

Perhaps more than any other specialty, gynaecology has been subject to increasing pressure during the last year, attributable in no small measure to the continuing effects of the Abortion Act. Because all of these cases must be seen urgently as outpatients, the delay in dealing with 'non-urgent' outpatients has increased. In view of the existing high levels of inpatient and outpatient activity in this specialty, improvements can only be achieved by increasing the resources available. Consideration must be given to the introduction of gynaecological work at the County General Hospital, possibly in beds vacated by the chest diseases service, and to an increase in the outpatient sessions available. If these measures are considered desirable, there will also be a need to improve the medical staffing, in the first instance by obtaining the approval of the RHB for the establishment of a further senior house officer.

Anaesthetics

There is an obvious need to increase the level of staffing in this specialty, particularly if the recommended improvements in the various surgical specialties are envisaged.

Radiology

As has been indicated previously, the workload in this service continues to increase, and discussions are currently taking place with officers of the RHB regarding a possible increase in the consultant establishment.

Dale Cottage Hospital

It is now quite clear that this hospital has outlived its usefulness. Although there would be some inconvenience for those who had to travel into Newton to hospital, medical patients could be readily absorbed by the existing general medical beds at Newton War Memorial Hospital and the County General Hospital; and development of the planned early discharge scheme in obstetrics will permit concentration of all obstetric activity in the group at Newton War Memorial Hospital. The early closure of Dale Cottage Hospital requires serious consideration.

J A Black-Smith
Chairman
Medical Executive Committee

Newton and District Hospitals

Medical Service Statistics

1 Resource Availability

Specialty	Catchment population for specialty	Available beds per 100 000 population	
		Group	Region
General Medicine	148 000	66.3	66.8
Paediatrics	148 000	20.3	13.3
Chest diseases	148 000	47.0	26.2
Geriatrics	148 000	116.7	75.6
General surgery	148 000	65.8	66.8
ENT surgery	285 000	10.5	13.1
Orthopaedic surgery	148 000	39.5	39.7
Ophthalmology	285 000	8.8	9.3
Obstetrics	118 000	42.4	36.9
Gynaecology	118 000	18.9	21.8
Anaesthetics	148 000		
Radiology	148 000		
Pathology	148 000		

Outpatient clinic sessions per 100 000 population		Medical staff (whole-time equivalent) per 100 000 population					
		Consultants		Other grades		Totals	
Group	Region	Group	Region	Group	Region	Group	Region
459.5	316.1	1.7	1.3	3.4	4.8	5.1	6.1
108.8	88.0	1.1	0.7	2.0	1.8	3.1	2.5
273.6	201.7	1.4	0.7	0.7	0.7	2.1	1.4
129.1	25.2	0.7	0.5	1.4	1.3	2.1	1.8
229.7	250.5	1.7	1.7	3.4	4.5	5.1	6.2
94.4	139.2	0.3	0.5	0.4	0.5	0.7	1.0
266.2	261.1	1.7	1.0	4.1	3.4	5.8	4.4
187.0	195.9	0.6	0.6	0.4	0.6	1.0	1.2
300.0	180.9	1.4	1.3	2.5	3.2	3.9	4.5
123.7	125.9						
		2.3	2.5	2.0	2.8	4.3	5.3
		1.2	1.3	-	0.3	1.2	1.6
		1.2	1.5	0.7	0.6	1.9	2.1

Newton and District Hospitals

Medical Service Statistics

2 Inpatient Admission and Outpatient Referral Rates

Specialty	Admission rate per 1000 population		Emergencies as percentage of all admissions	
	Group	Region	Group	Region
General Medicine	14.2	14.4	88.3	85.0
Paediatrics	5.8	3.6	78.7	86.5
Chest diseases	3.1	2.0	93.9	53.4
Geriatrics	8.5	2.9	74.3	64.1
General surgery	20.4	20.4	57.6	51.6
ENT surgery	4.5	6.2	16.1	12.5
Orthopaedic surgery	9.3	7.9	60.4	62.5
Ophthalmology	2.1	2.4	28.8	33.6
Obstetrics	16.8*	13.2*	15.6	14.5
Gynaecology	9.1	9.3	17.3	18.6

* Includes GP maternity admissions

\+ Antenatal patients only

New outpatient attendances per 1000 population		Average delay in 'non-urgent' outpatient appointments
Group	Region	Group
13.5	11.9	less than 1 week
4.2	3.1	less than 1 week
6.8	7.9	less than 1 week
2.6	0.5	2 weeks
18.4	20.0	4 weeks
11.1	13.4	6 weeks
15.6	23.2	5 weeks
7.8	12.5	6 weeks
13.8+	12.2+	less than 1 week
12.4	10.8	5 weeks

Newton and District Hospitals

Medical Service Statistics

3 Waiting Lists

Specialty		Waiting list at 31 December		Patients waiting per 100 000 population
		Last year	This year	
General medicine	Group	8	6	4.1
	Region			3.9
Paediatrics	Group	12	15	10.1
	Region			5.9
Chest diseases	Group	-	-	-
	Region			-
Geriatrics	Group	52	47	31.8
	Region			10.3
General surgery	Group	324	395	266.9
	Region			254.4
ENT surgery	Group	349	372	130.5
	Region			121.2
Orthopaedic surgery	Group	87	35	23.6
	Region			109.6
Ophthalmology	Group	107	131	46.0
	Region			41.2
Gynaecology	Group	118	136	115.3
	Region			127.5

Percentages of patients on each specialty waiting list for periods of :				Average waiting time for admission (weeks)
up to 1 month	1 to 6 months	6 to 12 months	more than 12 months	
100.0	-	-	-	1
52.9	41.4	3.2	2.5	
73.3	26.7	-	-	4
38.0	37.5	14.1	10.4	
-	-	-	-	
-	-	-	-	
66.0	31.9	2.1	-	7
62.4	30.1	5.0	2.5	
20.5	37.7	29.2	12.6	16
21.9	30.4	27.4	20.3	
25.5	44.9	20.7	8.9	18
24.9	48.6	22.6	3.9	
57.2	42.8	-	-	3
18.6	32.0	30.5	18.9	
20.6	52.0	19.8	7.6	16
21.5	45.1	24.2	9.2	
50.7	39.0	10.3	-	8
25.7	44.6	26.3	3.4	

Newton and District Hospitals

Medical Service Statistics

4 Resource Utilisation - Inpatients

Specialty	Hospital	Average of beds	
		Available	Occupied
General medicine	Newton W M	58.6	45.4
	County General	39.4	32.3
	Region		
Paediatrics	Newton W M	30.0	15.3
	Region		
Chest diseases	County General	69.4	43.9
	Region		
Geriatrics	County General	48.4	40.4
	Raven Grange	124.3	115.0
	Region		
General surgery	Newton W M	57.6	40.2
	County General	40.0	33.4
	Region		
ENT surgery	County General	30.0	16.1
	Region		
Orthopaedic surgery	Newton W M	58.6	51.5
	Region		
Ophthalmology	County General	25.0	18.4
	Region		
Obstetrics	Newton W M	40.0	31.3
	Region		
Gynaecology	Newton W M	22.4	18.8
	Region		
GP medicine	Dale Cottage	15.0	8.3
	Region		
GP maternity	Dale Cottage	10.0	4.7
	Region		

Discharges and deaths	Annual bed turnover rate	Mean duration of stay (days)	Turnover interval (days)
1336	22.8	12.4	3.6
760	19.3	15.5	3.4
	21.5	15.1	1.9
861	28.7	6.5	6.2
	27.4	8.2	5.1
452	6.5	35.5	20.5
	7.5	32.6	16.0
842	17.4	17.5	3.5
440	3.6	95.4	6.8
	3.9	88.3	5.7
1983	34.4	7.4	3.2
1141	28.5	10.7	2.1
	30.6	9.7	2.2
1275	42.5	4.6	4.0
	47.6	4.7	2.9
1380	23.5	13.6	1.9
	19.9	16.0	2.3
585	23.4	11.5	4.1
	25.6	9.9	4.3
1756	43.9	6.5	1.8
	35.7	7.7	2.5
1075	48.0	6.4	1.2
	42.8	7.0	1.5
195	13.0	15.5	12.5
	14.4	16.8	8.5
234	23.4	7.4	8.2
	35.2	6.3	4.0

Newton and District Hospitals

Medical Service Statistics

5 Resource Utilisation - Outpatients

Specialty		Clinic sessions held during year
General medicine	Group Region	680
Paediatrics	Group Region	161
Chest diseases	Group Region	405
Geriatrics	Group Region	191
General surgery	Group Region	340
ENT surgery	Group Region	269
Orthopaedic surgery	Group Region	394
Ophthalmology	Group Region	533
Obstetrics	Group Region	354
Gynaecology	Group Region	146

Attendances during year			Patients attending per clinic session			Ratio of return: new attendances
New	Return	Total	New	Return	Total	
1 998	11 189	13 187	2.9	16.5	19.4	5.6
			3.8	17.8	21.6	4.7
622	1 429	2 051	3.9	8.9	12.7	2.3
			3.6	13.8	17.4	3.8
1 006	2 315	3 321	2.5	5.7	8.2	2.3
			3.9	12.3	16.2	3.2
385	1 616	2 001	2.0	8.5	10.5	4.2
			2.0	8.8	10.8	4.4
2 723	6 264	8 987	8.0	18.4	26.4	2.3
			8.0	20.2	28.2	2.5
3 163	3 480	6 643	11.8	12.9	24.7	1.1
			9.6	20.6	30.2	2.1
3 942	12 220	16 162	10.0	31.0	41.0	3.1
			9.3	27.2	36.5	2.9
2 223	8 003	10 226	4.2	15.0	19.2	3.6
			6.4	23.2	29.6	3.6
1 628	11 888	13 516	4.6	33.6	38.2	7.3
			7.6	27.5	35.1	3.6
1 463	2 488	3 951	10.0	17.0	27.0	1.7
			8.5	15.0	23.5	1.8

Newton and District Hospitals

Medical Service Statistics

6 Resource Utilisation - Workload

Specialty		Admissions per consultant*		
		Emergency	Other	Total
General medicine	Group	745	100	845
	Region	942	166	1108
Paediatrics	Group	438	119	557
	Region	445	69	514
Chest diseases	Group	203	13	216
	Region	153	133	286
Geriatrics	Group	873	302	1175
	Region	372	208	580
General surgery	Group	733	540	1273
	Region	619	581	1200
ENT surgery	Group	251	1308	1559
	Region	155	1085	1240
Orthopaedic surgery	Group	339	223	562
	Region	494	296	790
Ophthalmology	Group	103	255	358
	Region	134	266	400
Obstetrics	Group	167	906	1073
	Region	120	711	831
Gynaecology	Group	114	543	657
	Region	133	583	716

* Consultant staffing measured in whole-time equivalents.

Outpatient attendances per consultant*

New	Return	Total
814	4558	5372
915	4301	5216
403	925	1328
443	1683	2126
481	1107	1588
1128	3610	4738
353	1481	1834
100	440	540
1109	2552	3661
1176	2940	4116
3867	4254	8121
2680	5628	8308
1606	4978	6584
2320	6728	9048
1359	4892	6251
2083	7499	9582
995	7267	8262
938	3377	4315
894	1521	2415
831	1496	2327

COMMENTARY ON REVENUE EXPENDITURE FOR THE PERIOD 1 APRIL TO 30 SEPTEMBER

At the halfway stage in the financial year the group has an over-spending of £12 000, or 1.6 per cent. Although the percentage is quite small, if the rate of over-spending is continued to the end of the year, the excess will be the largest for some years.

Salaries and Wages

Medical staffing is slightly under-spent, resulting from the difficulty in filling certain senior house officer posts. The saving in cost has only partly been offset by locum tenens and extra duty payments. It is probable that this under-spending will be maintained, or even increased, by the end of the year.

The sharp increase in local unemployment rates has made recruitment easier for many grades of staff. The nursing service has benefited from a slight improvement in trained staff availability, but most of the increase has been in the untrained grades. The professional and technical departments have not increased in terms of staff numbers, but there is evidence that casual vacancies are easier to fill, and there is a shorter staff turnover interval. Also, there is a steady increase in standby and on-call payments.

Improved recruitment in the ancillary staff categories has enabled long-standing vacancies in the domestic and portering departments to be filled.

As yet, there does not seem to be increased availability of clerical staff, and secretarial vacancies in particular are difficult to fill satisfactorily. The same applies to building and engineering staff, where numbers remain low, with a resulting necessity to put an increasing amount of work out to contract.

Non-staff Expenditure

The generally busier aspect of the group, in terms of treatment and patient throughput, is reflected in heavier expenditure on a number of non-staff headings, including provisions, drugs, dressings and medical and surgical equipment. A careful watch must be kept to ensure economy but inevitably a higher level of funding in future years will be necessary if this work level is maintained.

Newton and District Hospitals

Revenue Expenditure for the Period 1 April to 30 September

Group Summary

Description of expenditure	Cumulative expenditure in period £
Salaries and wages	
Medical	36 800
Nursing	246 200
Building and engineering	20 100
Administrative and clerical	28 300
Professional and technical	40 300
Other staff	153 600
Total	525 300
Non-staff expenditure	
Provisions	47 100
Uniforms	7 800
Drugs	24 200
Dressings	8 300
Medical and surgical equipment	35 200
Fuel, light and heat	37 800
Maintenance of buildings	25 100
Domestic renewals	10 600
Other expenses	38 900
Total gross expenditure	760 300
Less direct credits	27 800
Total nett expenditure	732 500
Central administration	12 100
	744 600
Nett over-spending	

Proportion of approved revised estimate for period	Spending	
	Over	Under
£	£	£
38 700		1 900
242 100	4 100	
22 700		2 600
28 400		100
38 500	1 800	
148 500	5 100	
518 900	11 000	4 600
45 800	1 300	
8 400		600
22 800	1 400	
7 900	400	
31 600	3 600	
38 200		400
22 100	3 000	
11 100		500
39 800		900
746 600	20 700	7 000
26 400	1 400	
720 200	19 300	7 000
12 400		300
732 600	19 300	7 300
	12 000	

COMMENTARY ON ANNUAL COST STATEMENTS

Newton War Memorial Hospital

The cost per inpatient week, at £57.84, is a little above both the regional and national averages, but can be regarded as satisfactory in view of the high bed turnover rate which exceeds the national average in all specialties. No particular cost heading can be singled out as being so significantly in excess of the average as to need comment, and the whole picture reflects a very busy hospital.

The high rate of working is also demonstrated by the cost per case which is well below the regional average, and almost £10 below the national average.

Outpatient costs per 100 attendances are somewhat above the regional average, and considerably above the national average. This is probably largely due to the number of patients per clinic session being lower than average in most specialties.

When considering the cost per new outpatient the excess over the regional average is even more marked, and reflects the comparatively low number of new outpatients attending clinics in some specialties and the consequent high ratio of return to new attendances.

County General Hospital

The cost per patient week is quite considerably above the average, which is obviously due to the rapid turnover of patients in the geriatric unit where the bed turnover is 17.4 against the regional average of 3.9. As might be expected the headings of expenditure chiefly contributory to the high cost are those which reflect a high admission rate.

The cost per case is nearly £20 below the regional average, and nearly £30 below the national average. According to the costing rules, the County General Hsopital is compared with 'partly acute' hospitals, that is, those with more than 40 per cent and less than 60 per cent of their beds allocated as 'excluded' (non-acute) specialties. At the County General Hospital approximately 46 per cent of the beds are 'excluded', and of these the 48 geriatric beds are used in a much more 'acute' manner than in the vast majority of comparable units. The hospital has, therefore, many more acute beds than those with which it is being compared, and this is reflected in the cost per case.

Raven Grange Hospital

The cost per week is quite unexceptional and compares almost exactly with the regional and national hospital averages for long-stay hospitals. This might be expected as the bed utilisation rates are almost exactly comparable with the regional figures.

Dale Cottage Hospital

Attention must be drawn particularly to the rising costs of this hospital in relation to work carried out. Bed usage again declined in the last financial year, and it will be seen that costs both per patient week and per case are higher than the regional and national averages. The position is probably worse than it appears from a financial point of view as the regional and national averages are based on all acute hospitals having less than 50 beds, whereas Dale Cottage Hospital has the advantage of relatively high throughput maternity beds which are instrumental in keeping down the cost per case.

Newton and District Hospitals

1 Outpatient Unit Costs - Newton War Memorial Hospital

Description of costs	Hospital unit cost £
a Costs per 100 outpatient attendances	
Pay: Medical	48.32
Nursing	27.16
Domestic	5.06
Other	3.23
Drugs	10.82
Dressings	2.89
Patients' appliances	14.96
Medical equipment	3.66
Totals	116.10
Operating theatres	7.43
Radiotherapy	-
Diagnostic x-ray	34.41
Pathology	11.33
Physiotherapy	7.34
Pharmacy	2.64
Ancillary medical services	6.37
Total - Treatment departments	185.62
Nurses in training	1.66
Catering	0.99
Staff residences	-
Laundry	1.43
Power, light and heat	5.16
Building and engineering maintenance	5.99
Medical records	23.62
General administration	10.46
General portering	4.04
General cleaning	2.41
Maintenance of grounds	0.67
Transport	0.21
Other services	14.31
GROSS TOTAL	256.57
Less direct credits	0.45
NETT TOTAL	256.12
b Costs per new outpatient	10.66

Regional unit cost £	National unit cost £
46.31	44.77
26.11	24.53
5.02	5.16
3.16	2.78
9.31	11.89
2.77	3.11
15.14	13.58
3.12	3.79
110.94	109.61
7.96	7.09
4.27	4.52
33.24	27.82
10.21	12.00
7.22	7.28
2.22	2.82
6.49	8.02
182.55	179.16
1.97	1.55
0.21	0.24
-	-
1.31	1.00
4.98	5.20
6.02	5.26
21.87	23.07
9.16	10.67
3.63	3.91
2.37	1.59
0.73	0.58
0.13	0.15
13.66	12.36
248.59	244.74
0.42	0.09
248.17	244.65
6.63	6.58

Newton and District Hospitals

2 Inpatient Unit Costs - Newton War Memorial Hospital

Description of costs	Hospital unit cost £
a Costs per inpatient week	
Pay: Medical	3.35
Nursing	13.71
Domestic	2.74
Other	0.36
Drugs	1.78
Dressings	0.51
Patients' appliances	0.07
Medical equipment	1.41
Contract services	-
Total - Wards	23.93
Operating theatres	5.92
Radiotherapy	-
Diagnostic x-ray	1.09
Pathology	2.03
Physiotherapy	0.35
Pharmacy	0.52
Ancillary medical services	0.50
Total - Treatment departments	34.34
Nurses in training	0.84
Catering	6.36
Staff residences	2.14
Laundry	1.41
Power, light and heat	2.06
Building and engineering maintenance	2.02
Medical records	0.58
General administration	2.52
General portering	1.38
General cleaning	0.66
Maintenance of grounds	0.31
Transport	0.24
Other services	4.32
GROSS TOTAL	59.18
Less direct credits	1.34
NETT TOTAL	57.84
b Costs per inpatient case	72.90

	National unit cost	Regional unit cost
	£	£
	3.10	3.42
	13.67	13.53
	2.77	2.67
	0.39	0.27
	1.62	1.69
	0.47	0.42
	0.05	0.07
	1.36	1.32
	0.08	-
	23.51	23.39
	5.70	5.56
	0.14	0.16
	1.01	0.99
	1.93	1.86
	0.36	0.27
	0.50	0.44
	0.51	0.42
	33.66	33.09
	0.81	0.86
	6.07	5.87
	2.15	2.12
	1.20	1.31
	1.88	2.01
	1.93	1.99
	0.50	0.53
	2.54	2.19
	1.35	1.38
	0.55	0.47
	0.23	0.23
	0.23	0.21
	4.35	4.31
	57.45	56.57
	1.75	1.21
	55.70	55.36
	82.51	83.62

Newton and District Hospitals

3 Inpatient Unit Costs - County General Hospital

Description of costs		Hospital unit cost £
a Costs per inpatient week		
Pay:	Medical	2.08
	Nursing	12.51
	Domestic	1.99
	Other	0.29
Drugs		1.32
Dressings		0.36
Patients' appliances		1.02
Medical equipment		1.04
Contract services		-
Total - Wards		20.61
Operating theatres		3.12
Diagnostic x-ray		0.84
Pathology		1.42
Physiotherapy		0.41
Pharmacy		0.38
Ancillary medical services		0.47
Total - Treatment departments		27.25
Nurses in training		0.48
Catering		4.45
Staff residences		1.08
Laundry		1.26
Power, light and heat		1.76
Building and engineering maintenance		1.59
Medical records		0.51
General administration		1.69
General portering		1.36
General cleaning		0.51
Maintenance of grounds		0.26
Transport		0.16
Other services		3.26
GROSS TOTAL		45.62
Less direct credits		1.05
NETT TOTAL		44.57
b Costs per inpatient case		86.82

	Regional unit cost	National unit cost
	£	£
	2.05	1.98
	12.26	12.33
	2.01	2.53
	0.30	0.22
	1.00	1.13
	0.23	0.23
	0.03	0.04
	0.63	0.66
	-	0.01
	18.51	19.13
	2.88	2.02
	0.53	0.55
	1.08	1.10
	0.17	0.23
	0.32	0.30
	0.26	0.45
	23.75	23.78
	0.61	0.50
	4.41	4.57
	1.05	1.16
	0.95	1.00
	1.72	1.72
	1.62	1.59
	0.34	0.31
	1.66	1.87
	1.06	0.94
	0.53	0.40
	0.32	0.29
	0.10	0.22
	2.98	3.10
	41.10	41.45
	0.99	1.06
	40.11	40.39
	105.67	116.79

Newton and District Hospitals

4 Inpatient Unit Costs - Raven Grange Hospital

Description of costs	Hospital unit cost £
a Costs per inpatient week	
Pay: Medical	0.88
Nursing	10.22
Domestic	1.71
Other	0.10
Drugs	0.53
Dressings	0.10
Patients' appliances	0.02
Medical equipment	0.14
Contract services	-
Total - Wards	13.70
Operating theatres	-
Diagnostic x-ray	-
Pathology	-
Physiotherapy	0.13
Pharmacy	0.16
Ancillary medical services	-
Total - Treatment departments	13.99
Nurses in training	-
Catering	3.56
Staff residences	-
Laundry	0.74
Power, light and heat	2.13
Building and engineering maintenance	1.64
Medical records	0.11
General administration	1.25
General portering	0.73
General cleaning	0.52
Maintenance of grounds	0.37
Transport	0.20
Other services	2.00
GROSS TOTAL	27.24
Less direct credits	0.51
NETT TOTAL	26.73

Regional unit cost	National unit cost
£	£
0.97	0.85
10.14	9.73
1.69	1.62
0.07	0.13
0.61	0.46
0.09	0.09
0.03	0.02
0.03	0.27
0.19	-
13.82	13.17
0.17	0.07
0.13	0.08
0.24	0.17
0.11	0.14
0.12	0.12
0.16	0.34
14.75	14.09
0.10	0.12
3.24	3.30
0.36	0.47
0.63	0.78
1.56	1.29
1.39	1.32
0.21	0.09
1.25	1.35
0.70	0.64
0.51	0.39
0.35	0.28
0.24	0.13
1.81	2.02
27.10	26.27
0.48	0.38
26.62	25.89

Newton and District Hospitals

5 Inpatient Unit Costs - Dale Cottage Hospital

Description of costs		Hospital unit cost £
a Costs per inpatient week		
Pay:	Medical	2.01
	Nursing	20.26
	Domestic	2.84
	Other	1.04
Drugs		0.84
Dressings		0.26
Patients' appliances		0.03
Medical equipment		0.58
Contract services		-
Total - Wards		27.86
Operating theatres		-
Diagnostic x-ray		0.12
Pathology		0.39
Physiotherapy		0.17
Pharmacy		0.36
Ancillary medical services		0.03
Total - Treatment departments		28.93
Nurses in training		-
Catering		6.02
Staff residences		-
Laundry		0.84
Power, light and heat		2.41
Building and engineering maintenance		1.93
Medical records		0.22
General administration		2.43
General portering		0.83
General cleaning		2.14
Maintenance of grounds		1.22
Transport		0.34
Other services		2.85
GROSS TOTAL		50.16
Less direct credits		0.82
NETT TOTAL		49.34
b Costs per inpatient case		80.07

	Regional unit cost	National unit cost
	£	£
	1.75	1.57
	14.47	17.10
	1.77	2.07
	0.02	0.08
	0.74	0.82
	0.33	0.27
	0.01	0.02
	0.45	0.55
	-	0.05
	19.54	22.53
	1.73	2.64
	0.16	0.14
	0.27	0.47
	0.12	0.17
	0.33	0.22
	0.05	0.06
	22.20	26.23
	-	0.06
	4.54	5.03
	0.18	0.85
	0.71	0.86
	2.05	1.91
	1.95	1.60
	0.15	0.18
	1.58	2.18
	0.59	0.71
	1.98	0.86
	0.45	0.49
	0.25	0.33
	2.08	2.74
	38.71	44.03
	0.78	0.95
	37.93	43.08
	79.03	74.20

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