MEDICAL PRACTICE

Hospital Topics

Inpatient Management: Variations in some Aspects of Practice in Scotland

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Summary

Data for four aspects of inpatient management—namely, variations in length of stay, the time patients spend in hospital before or after operation, and the proportion of patients operated on in surgical units—show considerable variations in certain aspects of practice by Scottish consultants. It is suggested that there may be simple explanations for some of the observed variations. The differences could be due to great variation in the constraints encountered by the consultants in their work, or to wide differences of opinion about the optimum treatment for specific diagnoses.

Introduction

"Why are there such unaccountable variations from city to city and even from hospital to hospital. . . in the duration of stay in hospital of patients with similar diseases?" This question by the B.M.A. Planning Unit (1969) was probably asked in this form because for the most part data are published in this way. Some regional boards, however (Acheson, 1968; Weir and Fordyce, 1968) have been preparing reports which give consultants information about certain aspects of their treatment of inpatients. This paper describes variations which exist in some aspects of the practice of consultants in Scottish hospitals in so far as they can be recorded by centrally collected hospital inpatient statistics.

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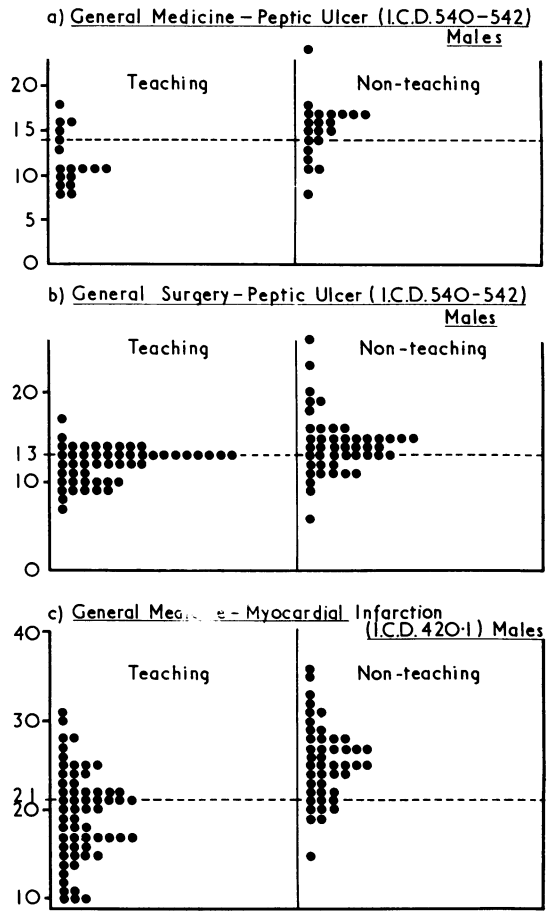

FIG. 1—Median duration of stay in days for two diagnoses for individual consultants in Scotland. (Data for 1967.) ● = One consultant. - - - Scottish median. I.C.D. = International Classification of Disease.

Method

Since 1961 summary data have been collected in Scotland on all inpatients discharged from non-psychiatric and non-obstetric N.H.S. beds. These records are returned to the central department, where they are edited, coded, and subjected to error checking before data processing by Scottish Office Computer Services on an I.B.M. 360/40 computer. Around 600,000 records are received annually. An annual publication is produced (Scottish Home and Health Department), and unpublished tables are also sent back to hospitals and the regional hospital boards. The general background to these statistics has been described elsewhere (Heasman, 1968).

Since 1967 the record forms have included identification of the consultant responsible for the care of each patient, and this has enabled analyses to be undertaken on a consultant basis. Individual statements have been sent out to each consultant in Scotland which give a brief statistical description of some aspects of his inpatient work load (Scottish Consultants' Review of In-Patient Statistics). The data are confidential to the consultant and to the senior administrative medical officer. Ten common diagnoses are listed for each specialty, and the data include numbers of patients by age and by source of admission, duration of stay, disposal, and deaths. Similar data relating to operations are given to surgeons. For data relating to operations hospital stay is split into time before and after operation, but for diagnoses it refers to the total spell in the unit. Comparative data for the hospital region and for Scotland are also distributed.

In this paper the data are confined to consultants practising

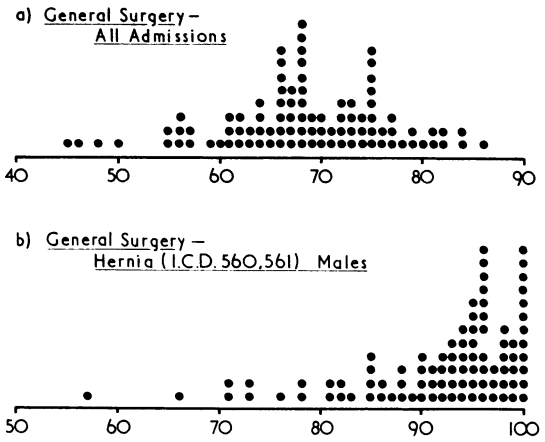

FIG. 2—Percentage of patients in surgical units who underwent operation. (I.C.D. codes, seventh revision.) ● One consultant.

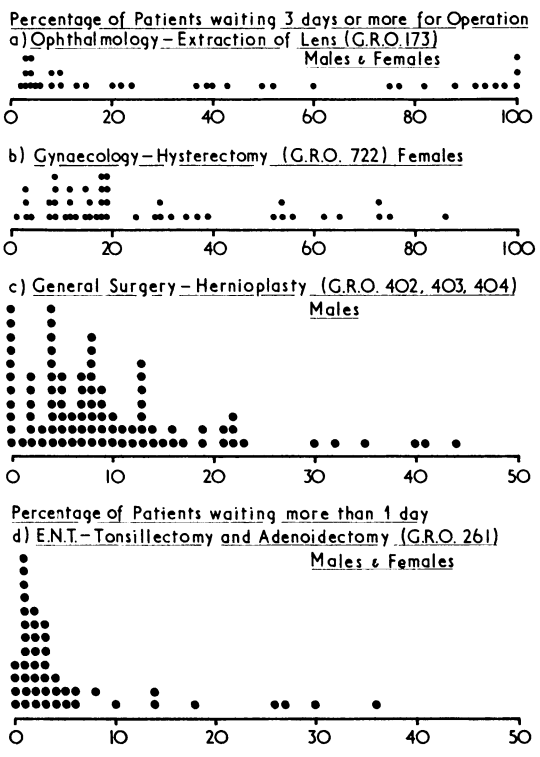

FIG. 3—Admission-operation interval (as a percentage of patients). ● = One consultant. G.R.O. General Register Office Code of Surgical Operations.

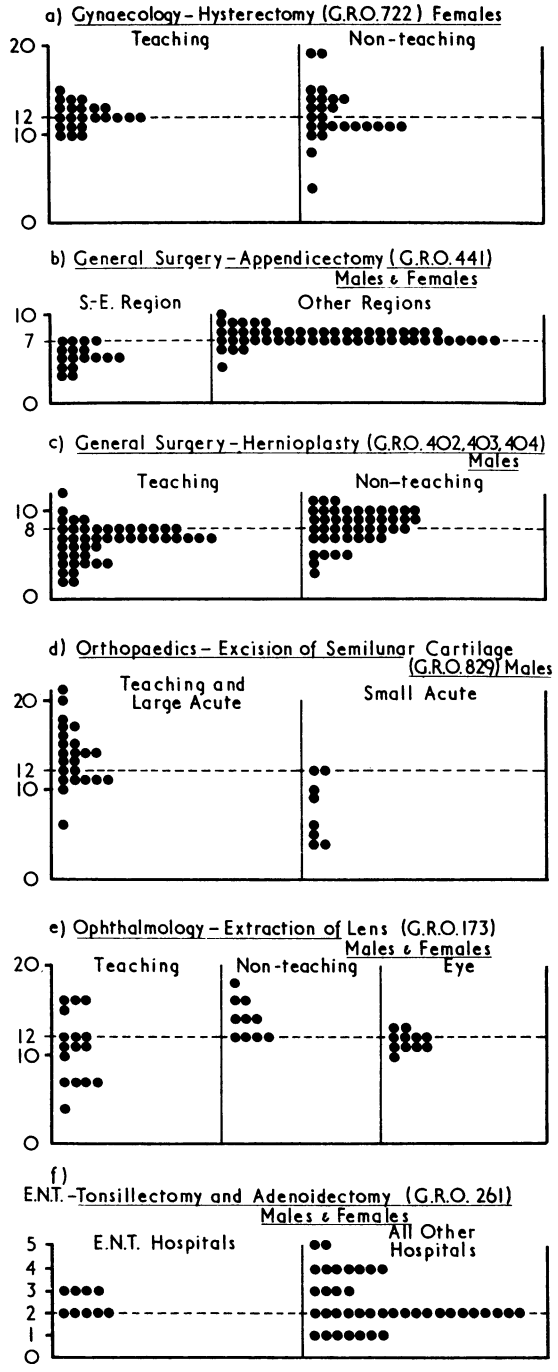

FIG. 4—Median duration of postoperative hospital stay in days for individual consultants in Scotland. (Data for 1967). ● One consultant. - - - Scottish median.

mainly in acute hospitals with more than 100 beds. To be included in the analysis each consultant must have been recorded as responsible for at least 20 patients with the appropriate diagnosis during the period under review. In Figs. 1-4 one dot represents one consultant. The data presented are for 1967, but those for 1968, which have recently become available, show similar distributions.

Results

Four measures are presented. For individual diagnoses the median total duration of stay for patients under the care of a consultant is used (Fig. 1). Data for surgical units are given in Fig. 2, which shows for each consultant the percentage of patients admitted who were operated on. This is shown for all admissions in Fig. 2 a, and in Fig. 2 b for patients with a diagnosis of hernia who were recorded as having had an operation for hernia. The percentage of patients who waited in hospital for three days or more before their operation is shown for three operations and for each consultant in Fig. 3 a-c; in Fig. 3 d, which refers to patients admitted for tonsillectomy and adenoidectomy, a waiting time of more than one day is the factor used. The data in Fig. 4 are similar to those in Fig. 1 and refer to length of stay; data are given for six operations and show the median duration of stay after operation.

The median was selected for Figs. 1 and 4 because it obviates the effect of patients whose stay in hospital was either abnormally short or abnormally long.

MEDIAN DURATION OF STAY

The median stay (Fig. 1 a-c) is shown for two conditions, but for one of these (peptic ulcer) the median stays are shown separately for two different specialist units.

(a) *Peptic Ulcer (Data for Consultants in Medicine).*—The range is from 8 to 23 days. In teaching hospitals 65% of consultants are at or below the Scottish median (14 days), compared with a third of those in non-teaching hospitals.

(b) *Peptic Ulcer (Data for Consultants in Surgery).*—Median stays range from 6 to 26 days. Eighty per cent. of consultants in teaching hospitals have a median stay at or below the Sottish median of 13 days, while more than 50% of those in non-teaching hospitals are above this level, and a greater scatter is also apparent. It should be noted that this group includes peptic ulcer with and without perforation.

(c) *Myocardial Infarction.*—For this condition median stays range from 10 to 36 days, consultants in teaching hospitals having lower medians than those in non-teaching hospitals.

PERCENTAGE OF PATIENTS UNDERGOING OPERATION

Distributions in Fig. 2 (a, b) show the percentage of patients operated on in general surgical units for all admissions and for hernia.

(a) *All Admissions.*—The Scottish median shows that two-thirds of patients discharged from surgical units have an operation. For individual consultants the range is from less than 50% to one at 86%.

(b) *Hernia.*—For Scotland generally 91% of patients admitted to surgical units with a diagnosis of hernia are recorded as being operated on for this condition. Some consultants operate on all patients and many on more than 95%; but a few consultants operate on less than three-quarters of patients, and one on not much more than half.

ADMISSION-OPERATION INTERVAL

Waiting times before operation are shown in Fig. 3 (a-d). The measure used is the percentage of patients waiting for a specified time before operation. Data are given for four operations in four different specialist units.

(*a*) *Extraction of Lens.*—The range for this operation is as extreme as possible. One consultant keeps 2% of patients waiting three days or more, and three keep all patients for this period.

(*b*) *Hysterectomy.*—For this operation again the range is considerable; most consultants keep fewer than 20% of patients waiting three days or more, but a few keep more than half of their patients for this time.

(*c*) *Hernioplasty.*—Eleven consultants keep no patients waiting three days for operation, but there are 13 consultants who keep more than 20% of patients waiting three days or more.

(*d*) *Tonsillectomy and Adenoidectomy.*—Four consultants keep none of their patients more than one day in hospital before operation, and the great majority keep fewer than 5%; a few, however, keep more than 20% of their patients waiting for this time.

POSTOPERATIVE STAY

The distribution for the median operation-discharge interval (postoperative stay) for six operations in five specialties is shown in Fig. 4 (a-f).

(a) *Hysterectomy.*—The range in the median stay after operation is from 3 to 18 days, and both of these extremes are to be found for consultants in non-teaching hospitals. Apart from this scatter there are no remarkable differences between teaching and non-teaching hospitals.

(b) *Appendicectomy.*—For this operation the range is from 3 to 10 days, with the Scottish median at seven days. This is also the most common practice except in the south-eastern region, where, in contrast to all other regions, all consultants are at or below the Scottish median.

(c) *Hernioplasty.*—The range is from 2 to 12 days' stay after operation. The median stay for Scotland is eight days; the median stay for almost all consultants in teaching hospitals is equal to or less than this figure, but in non-teaching hospitals a high proportion of surgeons are above the Scottish median.

(d) *Excision of Semilunar Cartilage.*—For this operation the median operation-discharge interval ranges from 3 to 21 days. A reversal of the usual pattern occurs in that consultants in small hospitals (101-250 beds) tend to discharge patients sooner than those in larger hospitals.

(e) *Excision of Lens.*—Consultant practice varies, median stay being from 4 to 18 days after operation. Surgeons in specialist eye hospitals are closely grouped around the median for Scotland, which is 12 days, while the remainder are more scattered, those in teaching hospitals being more often below the Scottish median, and those in non-teaching hospitals above this level.

(f) *Tonsillectomy and Adenoidectomy.*—A median stay of two days after operation is most common. The range is from one to five days, and a greater scatter can be seen in the general hospitals.

Discussion

These data are sent to individual consultants to try to help them assess some aspects of their work by comparing this with their colleagues. Acheson (1968) said that "in clinical work, as in other fields, unless information is available about the results of our actions, we do not have the option to make

rational adjustments to those actions in the future." This statement admirably describes the aims of the Scottish system, though as a method it is still experimental and falls far short of any measurement of total work load, particularly in the absence of any data on outpatients. An individual consultant may also complain that the data available to him for comparison relate to regional and national aggregates, which obscure the extent of the variation that exists. Our data, though for a limited range of conditions, partially remedy this particular deficiency.

The conditions have been selected partly because they are common but also because, in general, one might have expected that for each condition there would be relatively little variation in the indices selected when one consultant is compared with another. That this is not the case will probably come as no surprise, particularly in view of the B.M.A. Planning Unit's (1969) statement referred to above. From the data presented it would appear that wide variations exist in clinical management.

Many factors need to be taken into account in interpreting such data or in drawing conclusions from them, and undoubtedly they are not free from error, though another study has shown a low level of error in diagnostic recording. There may be sound reasons for some of the variations between individual consultants or between groups of consultants—for example, those in teaching and in non-teaching hospitals. Thus it might be profitable to look at factors relating to patients—for example, age distribution, severity—and to organization; for instance, the shorter stay in teaching hospitals might to some extent be accounted for by transfer of patients to convalescent accommodation or by transfer in from other units.

It should also be pointed out that the hernia group is less homogeneous than others in diagnostic composition. The number of deaths—that is, an index of severity—may also affect duration of stay for myocardial infarction in particular. A further analysis of the data will seek to determine the way in which these and other factors are associated with variations in length of stay. It is unlikely, however, that the recorded data will account for all the variation seen, and further investigation may need to take the form of field inquiries. To what extent, for instance, is length of stay in small hospitals a product of periodic visits by a consultant from another hospital?

Somewhat different factors may obviously influence the percentage of patients who undergo operation. We do not mean to imply that all patients in surgical units should come to surgery, but on the face of it there seems to be an inappropriate use of surgical skill and resources when over one-third of patients there do not have an operation. There may be very sound reasons for this, and it would be interesting to know what they are.

Our view is that, prima facie, the decisions which lie behind many of these very wide variations in practice are generally not founded on objective evidence, because this evidence is not available. Earlier one of us (Heasman, 1964) suggested that some of these questions could best be studied by means of controlled clinical trials of varying lengths of stay, and at least one such controlled trial has since been carried out (Morris, Ward, and Handyside, 1968). Undoubtedly these trials offer the best solution, but they are both difficult and time-consuming to carry out.

Our indices relate to aspects of the management of resources. This preoccupation with resources may be questioned by consultants, whose concern tends to be with making the best decision for the individual patient. Nevertheless, resources (including consultant time) are limited, and the hospital service must be concerned with efficient utilization if the needs of the community are to be met. Variations in length of stay should be assessed in terms of the end result for the patient, but when longer stay confers no benefit on a patient then shorter stay will be freeing resources for use by another. In this particular area the role of the central department is limited: it can collect statistics and draw attention to the apparent anomalies that exist, but action must ultimately come from the medical profession to provide solutions. We would therefore agree with the B.M.A. Planning Unit (1969) when they say that pressure for increased allocation to the Health Service is likely to be most effective "if we [the medical profession] can be seen to pay serious attention to the efficient deployment or organization of our professional resources."

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