

TALKING POINT

Medical manpower: a district model

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Introduction

It has been said—both nationally and regionally—that “it is wrong in principle to train doctors in greater numbers than there are likely to be career outlets available, and that the total numbers entering higher professional training, whether in academic or National Health Service posts should be closely related to the expected number of career vacancies.”¹

This principle, which has yet to be espoused with any conviction at district level, prompted Sheffield Health Authority to undertake a detailed study of local medical manpower problems with the objective of finding self funding solutions.

The well documented and long standing concern over hospital medical career imbalance, which culminated in the 1981 Short report, has tended to seek discrete solutions at both extremes of the problem.² Either the number of medical students recruited and trained should be reduced or consultant numbers should be deliberately and dramatically expanded at approximately three times the current rate—that is, over 4% annually instead of 1.5%.

In the first instance, reducing the numbers of medical students would not show an effect on the career grade for over 15 years, the approximate period of undergraduate and postgraduate training. In the latter case funding such additional expansion has become an increasingly unrealistic proposition against a background of Britain's economic recession. Moreover, neither solution approaches the total problem, because they fail to take account of doctors already undertaking higher professional training without any prospect of a career post. Nor do they solve fundamental issues such as the treatment of patients by qualified (as opposed to trainee) staff—the normal expectation in primary health care.

The Sheffield study, therefore, sought to provide a district based initiative, sensitive to the career needs and prospects of all training grades, and concerned with the quality of care provided to patients. At the outset some arbitrary standards were applied against which the results could be assessed. In the case of outpatients the staffing levels should ensure that all new outpatients could be seen by a consultant or senior registrar (subsequently referred to as senior staff): all inpatients could be seen by senior staff within 48 hours of admission and preferably within 24. This enabled a calculation of existing workloads per doctor and of potential workloads given an adjustment of grades to bring specialties into balance.

Method

SENIOR REGISTRARS

As the number and ages of existing consultant staff determine the

promotion prospects of junior doctors they provide baseline data for a balanced career structure. So the average remaining working life of current consultants in a specialty (their average age deducted from a notional retirement figure of 60) divided by the normal senior registrar training period gives the consultant to senior registrar ratio (table I).

TABLE I—Senior registrar requirement to fill planned consultant numbers

	District requirement	Regional requirement
Average age of consultants	45 years	48 years
Remaining working life	15 years	12 years
Senior registrar training period	4 years	4 years
Ratio of consultants to senior registrars	3.75:1	3:1
No of consultants	20	38
No of senior registrars needed	5.33	12.67

There is also a need in a teaching district to train senior registrars to provide consultants elsewhere in the region, assuming regional self sufficiency. (The assumption of regional—and by implication district—self sufficiency is to a certain extent artificial. It is not possible at district level to take account of national requirements, though it would be unrealistic for a teaching district to ignore regional needs. Moreover, such an assumption provides the necessary framework for district planning and a starting point for determining staffing levels, without which it would be difficult, if not impossible, to make rational decisions on numbers and grades of staff.)

Trent is unique among the provincial regions in having three teaching districts, which share teaching and training responsibilities. For the purposes of this exercise Sheffield is assumed to have two fifths, rather than a straight third, as this more accurately reflects the existing distribution of workload and training posts and also allows for wastage.

As with the district calculation it is possible to determine the regional element of the senior registrar requirement and add this to the district need, thus producing a total senior registrar need for Sheffield. Thus, Sheffield's two fifths quota would be 5.07 regional senior registrars in general medicine. Added to the number of senior registrars required for the district (5.33) this would give a total district senior registrar requirement of 10.4.

REGISTRARS

Having calculated the required number of senior registrars, it is then possible to determine the need for registrars, again dependent on their training period. In most cases this is assumed to be three years as against four years for senior registrars. Whether this is a proportion of the total regional senior registrar requirement or limited to the district is usually specialty dependent, with most of the acute clinical specialties having registrars in non-teaching districts. In such cases the registrar need would be related only to the Sheffield element of its senior registrar need. Where registrar posts are confined to teaching districts the number would need to be sufficient to fill all the district's senior registrar posts, including the regional element.

SENIOR HOUSE OFFICERS

The need for higher professional training grades depends on consultant posts, so that to achieve a balanced career structure the existing numbers will need considerable reduction. The senior house officer requirement has

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different criteria; it must ultimately bear some resemblance to registrar grades or the bottleneck will merely move down to senior house officer level unless the planned length of training is extended in that grade. It is envisaged, however, that this grade of staff will bear the brunt of on call duties, supported where necessary by house officers or, at a more experienced level, by registrars and senior registrars.

As on call rotas cannot be more onerous than one in three, the need for junior doctors is already partially determined. This need must then be related to workload, taking account of factors such as split site working, cross cover between specialties, and the intensity of bed usage. It is possible to use a variety of indicators, sensitive to the differing work patterns between specialties—for example, acute or longer stay, clinical or support services—to determine staffing figures with no heavier, and often reduced, commitment than exists at present.

For instance, on one in three rotas and 20 beds per doctor those on call cover 60 beds—the present position in some, if not all, acute general medical units. This suggests that 20 beds per senior house officer is a rough guide to the on call staffing requirement in some clinical specialties, and clinicians with whom this was discussed did not contradict this principle. Alternatively, the bed throughput may be a better (though still crude) indicator, in which case average length of stay or deaths and discharges or both may be used to determine staffing levels. Again discussions with clinicians suggested that, while there may be great variations in daily workloads depending on the numbers of waiting list and immediate admissions, a reasonable average would be three patients “clerked” a day in surgical specialties, and two in medical specialties. These figures can then be used, either in conjunction with length of stay and bed occupancy or with deaths and discharges (table II), to take account of different working patterns in the various specialties. This system also has the advantage of relating staffing levels to overall workloads and not just to on call duties.

TABLE II—Senior house officer requirement in general surgery and general medicine

Specialty	Patients clerked daily	Average length of stay	Beds occupied occasionally	SHOs needed*
General surgery	3	7	277	13·19

Specialty	Patients clerked daily	Deaths/discharges	Available days	SHOs needed†
General medicine	2	14 239	365	19·51

*No of beds divided by No of patients × average length of stay.
 †Deaths and discharges divided by No of patients × available days.

The required numbers of staff must then be allocated, on the basis of one in three rotas, to the units where the specialty is located. Naturally, where a service is provided on one site such allocation is relatively simple; it is the multisite specialties or those that provide support for them—for example, anaesthesia—that create difficulties.

It is clear from these calculations that considerably more senior house officers are required in the main acute specialties than there are registrar posts to which they could progress. In some cases this presents few problems since the senior house officer grade provides training for other specialties—for example, paediatrics, obstetrics and gynaecology—general practice, and non-clinical careers. Thus, probably a third or less of the proposed senior house officer establishment would require higher professional training in that specialty. Other circumstances are more problematical, notably the main surgical specialties, where even allowing for subspecialisation and wastage there would seem to be too many senior house officer posts in relation to the proposed available registrar grades. To resolve these difficulties will require serious consideration at national level of the future role and training implications of middle grade posts, with the possibility of lengthening the time a post is occupied and the rotations it embraces, or amalgamating grades, or both. Certainly, the Sheffield DHA is actively considering the possibility of lengthening the time in post at senior house officer grade. Theoretically, this would mean spending longer in a junior post than ideally expected, but in practice an extra year at senior house officer grade would be considerably less than is happening in many districts now.³

Whatever the manpower discrepancies that result from having one grade related to service need and the next related to training need, placing the emphasis on numbers of senior house officers moves competition for hospital career posts down to a realistic level where career choices should be made. To have too many registrars and senior registrars who have no possibility of obtaining a consultant post is unfair, expensive, and wasteful. Such an emphasis also makes apparent at a much earlier stage any surpluses (or shortages) of doctors in training and offers the opportunity to regulate the

supply—for example, by lengthening the time of training—in a controlled manner. It also means that if the total numbers at this earlier level of professional training were too high adjustments to medical school entry would be reflected in the minimum possible time.

Results

Applying the formulae described above to hospital specialties, as currently staffed in Sheffield, has shown that there is a slight surplus of senior registrar posts and a considerable surplus of registrar posts. The number of senior house officer posts would need to rise slightly, but rationalisation of services, coupled with a slight decrease in available beds in the forthcoming planning period, suggests that the numbers will be roughly comparable with those at present.

A medical manpower computer model was developed on a BBC micro-computer. This first identified surplus training posts and converted the revenue so released into additional consultant posts. The model then investigated the effect of these extra posts on the need for junior staff. In relation to senior registrars the new consultant posts make little difference. This is because the average age of the specialty reduces significantly with the new appointments (age on appointment is assumed to be 35), and thus raises the consultant to senior registrar ratio. Effectively, this means that more consultants are required in relation to existing senior registrar posts (table III).

TABLE III—Additional consultant appointments: effect on junior staff

Existing staff need		New staff need	
Consultants	20	New consultants	25
Average age	44 years	New average age	40 years
Working life	16 years	New working life	20 years
Ratio of consultants to senior registrars	4:1	New ratio of consultants to senior registrars	5:1
Senior registrars	5*	New senior registrars	5*

*Consultants divided by ratio of consultants to senior registrars.

This, of course, applies only to Sheffield consultants and the district's need for senior registrars. The unknown factor is what, if any, expansion will take place in non-teaching districts, though there is an option on the model to take into account a specified percentage increase, which may be amended as more information becomes available on what action is being taken in other districts.

Similarly, in the case of registrars there is little effect unless the specialty has these grades only in teaching districts and, therefore, there is a regional commitment. When this occurs the model can again calculate any additional need using a specified consultant increase.

The model also calculates the effect on workload of adjusting the grade mix and funding the additional consultant posts, and there is an option to measure this against staff required to provide a specified level of service. The proposed expansion of consultant posts in Sheffield relates to the criteria outlined above—that is, sufficient senior staff to see all new outpatients and all new inpatients within 48 hours of admission. Gross discrepancies in this measurement would suggest further investigation is needed.

Summary

The model consists of a series of “what if” projections to determine:

- (1) The effect on different grades of staff of redressing the career imbalance within specialties.
- (2) Following such a staffing adjustment what consultant expansion is possible within financial constraints.
- (3) The consequences on workload of both the adjustment and potential consultant expansion.
- (4) The junior staff requirement to meet current inpatient needs, including on call liabilities and how this requirement relates to a balanced career structure.

An amended version has been developed for non-clinical specialties, using only the options relating to career balance, possible consultant expansion, and proportionate staff increases.

The model works best with the main specialties, as staffing and workload in the subspecialties tend to be too small for mathematical manipulation. It is possible to take all medical groups and all surgical groups together, deduct figures for the main specialty—for example, general medicine—and apportion any surplus posts between the remaining specialties.

TABLE IV—Existing and proposed staffing levels, clinical specialties

Specialty	Consultants		Senior registrars		Registrars		Senior house officers	
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed
General medicine	23	28.5	13	11.5	13	5	16	19
Paediatrics	9	11	6	5	4	3	13.5	12
General surgery	15	18	7	7	10	3	8	12
Obstetrics and gynaecology	11	14	6	7	4	4	19	14

Conclusion

The model gives accurate predictions of district medical manpower requirements within the specified constraints, but these predictions are only as useful as the assumptions on which they are based. Additionally, the predictions may need further interpretation in the light of particular local conditions or circumstances peculiar to a single specialty. For this reason the model must be seen as a diagnostic indicator of an experimental nature, rather than a precise measure of medical need. By design the model is intended, because of the variable position with which it is dealing, to monitor and re-evaluate its own predictions. Thus, some of the assumptions used are, within the model itself, amenable to alteration, and any or all of them can be adjusted to meet changing criteria.

On this basis proposed new staffing figures have been issued to medical divisions for discussion (table IV). (In the case of general surgery the additional three consultant posts have been agreed and negotiations are in progress to determine the numbers and grades of junior staff.) They are intended to take account of funding all posts, except house officers, and to balance the registrar, senior registrar,

and consultant grades in career terms. The staffing levels are, of course, negotiable if they are thought to be unsuitable to clinical or training requirements. The indicated grade mix, however, does provide a basis for resolving longstanding staffing problems and also relates to the specified workload criteria. The model could give a reasonably accurate prediction of the district need for medical students over the forthcoming planning period, and if applied regionally could indicate the required intake for all three Trent medical schools.

References

- 1 Department of Health and Social Security. *Joint planning of training grade numbers. Consultation document*. London: DHSS, 1984.
- 2 Social Services Committee. *Fourth report. Medical education with special reference to the number of doctors and the career structure in hospitals*. London: HMSO, 1981. (Short report.)
- 3 Todd GB, Sheldrick K. Registrars and SHOs in the Trent region in 1982. *Br Med J* 1983;286:1997-8.

(Accepted 17 July 1985)

Clinical academic staff salaries

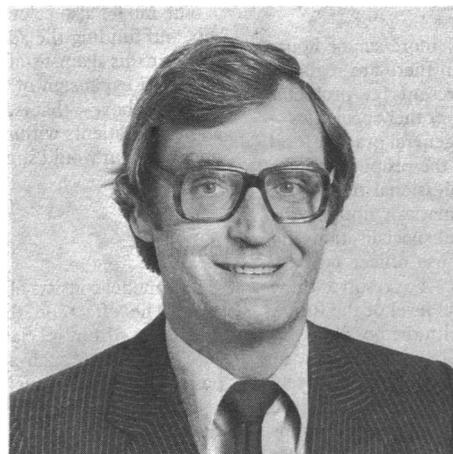
Sir Keith Joseph to meet vice chancellors

At a meeting on 16 October between the Secretary of State for Education and Science, Sir Keith Joseph, and representatives of the Committee of Vice Chancellors and Principals to discuss clinical and non-clinical salaries Sir Keith will be presented with a memorandum explaining the relationship between the National Health Service and university clinical staff. This will be prepared by the chairman of the Clinical Academic Staff Salaries Committee, Sir Edward Parkes. The amount of service work that clinical academic staff do for the NHS varies from 10% to 100% of their duties.

Despite the fact that pay parity with comparable NHS staff has been maintained since 1968 the salary increases that were recommended for doctors in the NHS by the doctors' and dentists' review body in June have not yet been translated to clinical academic staff. The Committee of Vice Chancellors and Principals is anxious to continue the principle of parity and to finalise the arrangements but it has not been prepared to discuss salary increases until the Department of Education and Science has given a firm commitment for additional funding for the universities.

In his opening remarks to the Medical Academic Staff Committee on 27 September Dr Colin Smith, who was re-elected chairman, reminded the committee that the numbers of clinical academic staff had been reduced by 21% in the past five years. In the past three years alone over 160 jobs had gone. Furthermore, medical faculties were facing deficits of up to £500 000. All this had had a major effect on academic life. The staff were concentrating on their clinical role at the expense of other activities.

Dr Smith believed that there was a misunderstanding at the Department of Education and Science about the relationship between clinical academic medicine and the clinical work that academic staff did for the NHS. The two were interchangeable. Sir Keith Joseph had said that salaries were intended to recruit, retain, and motivate staff; that was certainly not happening so far as clinical academic staff were concerned. The position had been aggravated by the fact that clinical staff at the Medical Research Council had received salary increases in line with NHS as had doctors in the armed forces.



Dr Colin Smith, chairman of the Medical Academic Staff Committee.

Many clinical staff had written to their members of parliament drawing attention to the seriousness of the position and how local NHS services were being affected.

Dr Smith paid tribute to the sympathetic support that clinical academic staff had received from other sections of the profession and from the BMA

and its chief officers. At the 1985 annual representative meeting the following resolution had been passed unanimously:

"That this meeting deplores the fact that the Committee of Vice Chancellors and Principals has not yet translated the 1985 review body award for university clinical academic staff and calls on the Department of Education and Science to ensure the principle of parity of salary with the NHS made in 1968."

The committee was concerned that staff in some areas were becoming increasingly restless at the lack of progress, and before the meeting on 16 October all clinical academic staff who are BMA members will receive a letter setting out the latest position. At the same time the BMA intends to collect up to date information on vacancies that have not been filled because of lack of funds, although some of these posts have now been closed. If a satisfactory agreement has not been reached by the end of November the committee plans to convene an emergency meeting of the Conference of Medical Academic Representatives.

Updated BMA tax leaflets

The BMA's series of seven tax leaflets has been updated to cover the tax year 1985-6 in the light of the Finance Act, which followed the budget. Important changes relate to partnership taxation and to retirement relief. The leaflets cover the following topics: (1) General principles; (2) Income tax—schedule D; (3) Income tax—schedule E; (4) Capital gains tax; (5) Retirement annuity contracts; (6) Income tax—partnerships; and (7) Tax for the newly qualified doctor. BMA members may obtain copies free of charge from their regional office. A stamped addressed envelope would help speed dispatch.