

# **Balancing the concentration of services required for professional training requirements with demand and needs for local services: a policy analysis**

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***Report for the National Co-ordinating Centre for NHS Service Delivery and Organisation R&D (NCCSDO)***

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Interviews were conducted in the medical Royal Colleges and with representatives of Regional Postgraduate Deans, the Department of Health and other relevant bodies. They are identified in Appendix 2. We thank them for their interest and generous support during the project. Many of the interviewees later reviewed the draft of Section 4 of the report. We are especially grateful for their advice.

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Finally, while the report draws upon many sources, both written and oral, the views expressed are those of the authors. Any errors or omissions are the sole responsibility of the authors.

## **Executive Summary**

This study was commissioned by the NHS Service and Delivery Organisation R&D programme. It examined the extent to which recent changes in postgraduate medical education and training guidance for junior doctors may be influencing the concentration of services available to patients. It was intended to update a review of training requirements undertaken in 1996 for the Department of Health (DH). The policy concern was that changes in postgraduate curricula and experience requirements may lead to the concentration of junior doctors in larger hospitals. This could have adverse impacts on the access of patients to NHS services. Teaching hospitals have well-known responsibilities for medical education. However, virtually all district general hospitals (DGHs) provide training for junior doctors and junior doctors account for 50% of the medical workforce. Changes to the postgraduate medical curricula and training can therefore have impacts throughout the NHS on the ability to deliver patient care.

At the time of the study, major changes were being introduced by the DH in the structure and organisation of postgraduate medical training as well as moves to secure compliance of junior doctors' working hours with the European Working Time Directive (EWTd). With so much change taking place and implementation only beginning, it was impossible to identify the impact on the interface of training and delivery of patient care. However, we do comment on the direction of change.

Given the complex pattern of change, several research methods were used. These included literature search, monitoring of policy announcements, survey of documents from Royal Colleges and specialist associations, semi-structured interviews, case studies and quantitative analysis. Early in the study it was obvious that the specialty rather than the trust was the most important unit of analysis. Curricula and management of training are by specialty. Within a trust that may cover one, two or even three acute hospitals, dependence on junior doctors to deliver services varies by specialty, as do the problems of complying with the EWTd.

The key finding of the research is that changes in postgraduate medical education and training under consideration or being introduced are introducing greater flexibility into the training regime with less emphasis than in the past on exposure to indicative numbers of procedures or clinical caseloads. These were the criteria that in the past were a factor driving greater concentration of services. Recommendations for changing training that will lead to more generalist consultants and fewer specialists should, when fully implemented, also reduce the pressure for concentration of services. In addition to revision in training requirements, other changes in the organisation of training should contribute to less concentration of junior doctors in larger hospitals. For a number of years specialist registrars have been appointed to training programmes and when on a training programme a junior doctor rotates between a number of hospitals. Some time will be spent

in large specialist hospitals but a trainee will be expected to work in other hospitals to acquire experience of dealing with more routine clinical problems and procedures. The relaxation of controls on national training numbers and the encouragement to workforce development confederations outside teaching centres to take up additional national training numbers should have important implications for the availability of higher trainees in smaller DGHs. Changes being introduced for basic specialist training mean that in future senior house officers should also be in training programmes with planned rotation between hospitals. These approaches introduced by the DH to allocating trainees to hospitals in different parts of England should contribute over time to deconcentration of the junior doctors available to provide patient services.

The changes to postgraduate medical education and training since 1997 should make a positive contribution to the DH policy of keeping the NHS local. Depending on the speed of implementation and success of new training programmes, it should be easier to maintain services reliant on junior doctors in smaller DGHs. This is an important change from the pre-1997 trend. Problems likely to emerge in the near future focus more on consultants. The new, more flexible approach to training will require a larger input from consultants in supervision and assessment. Attempts to secure a wider geographic distribution of junior doctors will increase pressure on consultant time in areas that historically obtained relatively few senior trainees. At the individual trust level, the tension between employment of consultants to meet NHS targets such as elective waiting times and use of consultants to support increased training obligations can be serious and there remains the question of when the EWTD will begin to be enforced for consultants.

A question raised several times during this research was the potential conflict between the policy of offering more patient choice and continued reliance on the NHS to provide training for doctors. If the DH restricts choice to hospital and consultant team, there would be few impediments to the wider use and availability of junior doctors. However, if patients are offered the choice of a named surgeon and prefer to be treated by a consultant rather than a trainee, there could be a serious conflict between service delivery and training of the next generation of doctors. At present it is unclear precisely what choices are to be offered to NHS patients but it is important that design of the choice regime is informed by the importance of medical education and training within the NHS.

It is unclear how the new DH policy of payment by results will affect the ability and willingness of trusts to employ doctors in training. Changes to the training regime outlined in this report should make it easier for smaller trusts to employ relatively more junior doctors than in the past. However, more trainees reduce the time of consultants available for patient treatment. As our preliminary analysis indicates, in some specialties the net impact on numbers of patients treated can be negative. Under the new financial flows regime trusts have an incentive to maximise the number of patients treated from a given budget. The benefits of the new flexibility in postgraduate medical training, which should be to the relative benefit of smaller DGHs, may be diminished by the incentives generated by the new payment system.

## Future research

This report makes clear that major changes are being introduced into postgraduate medical education and training that can lead to less pressure to concentrate services than in the past. However, simultaneous change to working times and government policy initiatives such as patient choice and payment by results will affect the extent to which changes in training regimes will contribute to the wider policy of keeping services local. Priorities for new research should be given to monitoring the impact of this complex set of changes on organisations delivering health care. The research should be focused on two issues, as follows.

- Use of routine data to monitor changes in service delivery by site and specialty. As discussed in this report, a few key improvements in data collection by the DH would enable policy-makers to identify how access is changing early enough to consider adjusting policies that may be adversely affecting access.
- Incorporation of data on health outcomes in monitoring the effects of the emerging new system of postgraduate medical education and training. The impact of moving to shorter periods of training, new methods of assessment of competency, more generalist and fewer specialist consultants should not be judged by the change in consultant numbers but on the quality of care delivered by the reformed system. The DH is moving towards routine collection of data on health outcomes. Research on how best to use these data to examine the impact of the reforms to postgraduate medical education and training is of prime importance if the Postgraduate Medical Education and Training Board, now assuming responsibility for all aspects of training, is to judge and adjust policy to the benefit of patients.

# The Report

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## Section 1 Introduction

In the UK economy, the NHS is unusual as a supplier of services in its dependence on trainees to provide final services to consumers. Workforce planners face an apparent dilemma: staffing and organisation of hospital services must facilitate the production of doctors to meet future service demands. At the same time staffing and organisation of services must meet current service demands from patients requiring treatment today. The budget available to do both is constrained. See Table 1.1.

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**Table 1.1 Breakdown of hospital manpower in England, 2003**

Hospital manpower	Number	Percentage of workforce
Consultant	28 750	38%
Training grades		
SpR	14 619	20%
SHO	18 698	25%
HO	4003	5%
Other career grades	7256	10%

*HO, house officer; SHO, senior house officer; SpR, specialist registrar.*

*Source: Department of Health, Hospital, Public Health Medicine and Community Health Services Medical and Dental Staff in England: 1993–2003.*

The NHS Plan introduced new structures for undertaking integrated workforce development and planning. According to the Department of Health (DH), the fundamental purpose of workforce planning is 'to ensure that there are sufficient staff available at the right time with the right skills to deliver high quality care to patients.' Workforce planners are therefore responsible for balancing training requirements for medical and non-medical education, including contractual obligations, on the one hand and appropriate levels of clinical services for patients in all communities on the other. Where the two requirements appear to conflict, the question is how NHS organisations trade one off against the other. Decisions taken by national planners may not correspond to the perceived constraints and trade-offs observed at the local level of the hospital.

### 1.1 Background to this study

In 1997 the NHS Centre for Reviews and Dissemination (CRD) at the University of York published an extensive review of the factors contributing to the increasing concentration of hospital services in England (Ferguson *et al.*, 1997). An analysis of college guidelines on postgraduate medical training and manpower recommendations from colleges and professional associations,

undertaken as part of the York study (Dowie and Sykes, 1996), led to the conclusion that training guidelines exert an influence on service configuration (Ferguson *et al.*, 1997). It appeared from this 1996 review that the strong focus of the professional bodies on improving the quality of technical training resulted in little regard for reductions in patient access. It is difficult to disentangle the influence of Royal College guidelines on training and on manpower but the joint implications for concentration were highlighted by the 1998 Report of the Senate of Surgery of Great Britain and Ireland. The report recommended that surgical services would best be provided from units serving catchment populations of 450 000–500 000 (British Medical Association, 1998). The recommendations of the Royal College of Paediatrics on the concentration of services to improve medical training would have the effect of undermining DH policy to decentralise maternity services.

Concentration of hospital services was of concern if it had the effect of increasing the distance patients must travel to access treatment. The issue was whether concentration reduced willingness and ability to utilise services. The 1996 study reviewed the literature on the relationship between observed rates of utilisation and distance of travel time as a proxy for access (Place, 1997).

The present study was undertaken to investigate whether the requirements of postgraduate medical training were continuing to exert pressure to concentrate hospital services. If, over the intervening years, training has continued to be a significant driver of concentration, it is important to identify ways in which training of doctors can be pursued at minimum cost to patients who may be affected by the concentration of services.

At the beginning of this research it became obvious that virtually every aspect of postgraduate medical education (PGME) was in the process of major change. Box 1.1 lists some of the major DH initiatives. Statutory regulation, curricula, finance and workforce planning are some of the areas where changes initiated in recent years have yet to be implemented or are being reconsidered. This means we have not been able to identify the impact of changes, but we do try to indicate the direction of change.

**Box 1.1 DH publications impacting on postgraduate medical education and training, July 2002 to December 2003**

Modernising postgraduate training

- *Unfinished Business*. Proposals for reform of the Senior House Officer grade. A Report by Sir Liam Donaldson, Chief Medical Officer for England. A paper for consultation, August 2002
- *Modernising Medical Careers*. The response of the four UK Health Ministers to the consultation on Unfinished Business: Proposals for reform of the Senior House Officer grade, February 2003
- *Modernising Medical Careers for Non-Consultant Career Grade Doctors*, July 2003

Modernising statutory arrangements

- The Postgraduate Medical Education and Training Board. Statement on Policy, July 2002

- The General Medical Practice and Specialist Medical Education, Training and Qualifications Order 2003. Consultation Document, November 2002

#### Financing postgraduate training

- *Funding Learning and Development for the Healthcare Workforce*. Consultation on the Review of NHS Education and Training Funding and the Review of Contract Benchmarking for NHS Funded Education and Training, July 2002

#### Working patterns of doctors in training

- *Guidance on Working Patterns for Junior Doctors*. A document produced jointly by the DH, the National Assembly for Wales, the NHS Confederation & the British Medical Association, November 2002
- Guidance on the Working Time (Amendment) Regulations 2003. Implementation for doctors in training

#### The NHS Plan

- *Keeping the NHS Local – A New Direction of Travel*, February 2003

#### Workforce planning

- Care Group Workforce Team Recommendations 2003. Report to the Workforce Numbers Advisory Board (from eight teams), November 2003

#### Sources of statements and updates

- Bulletins for Chief Executives (weekly), Human Resources Directors (fortnightly), Workforce Development Confederations (weekly)
- Advanced letters (particularly relating to pay and conditions of service) and Health service circulars
- Ad hoc announcements on DH web pages

*Note: This list is not comprehensive but identifies key sources.*

## **1.2 Aims and objectives of the research**

The aim of the present research was to clarify the nature of the trade-offs that policy-makers face when realigning services in response to PGME guidance, and the extent to which alternative configurations of services will affect expected training outcomes. There were five objectives:

- to clarify and review Royal College and General Medical Council regulations and requirements for PGME, and colleges' and associations' guidance on staffing services;
- to appraise PGME guidance provided to NHS providers and recent relevant research on access and reconfiguration;
- to examine contractual requirements for junior medical staff and for consultants (as trainers) and their impact and that of PGME requirements on workforce planning activities;

- to formulate any implied trade-offs between re-configuring services to meet PGME training requirements and maintaining patient access to services;
- to assess the scope for conducting empirical work on the alternative configurations for PGME and patient access that emerge from the earlier stages and, depending on the availability of suitable datasets, undertake modelling.

### **1.3 Research methods**

Various research methods were used, both qualitative and quantitative.

#### **1.3.1 Literature search for publications on access**

The 1997 CRD report on concentration and choice included a review of the literature on the influence of concentration on access (Place, 1997). The search strategy was designed to identify empirical studies on the relationship between aspects of concentration, patient accessibility and utilisation of hospital services. We initially ran the original search strategy (Place, 1997: Appendix A) to identify relevant studies published since the 1997 review that could affect the conclusions of the original report. The strategy was then refined and 11 databases searched. Appendix 1 of this report gives details of the databases and the search strategy.

#### **1.3.2 Monitoring policy announcements**

The project's duration, from July 2002 to March 2004, coincided with a period of intense activity in the implementation of a range of Government policies concerning the organisation of postgraduate medical education and training, funding for postgraduate training posts in NHS hospitals, the European Working Time Directive (EWTD) for reducing junior doctors' hours and the wider Improving Working Lives strategy for modernising the NHS workforce. Since new announcements were usually placed on the Internet, a strategy was developed for regularly scanning key websites:

- DH bulletins addressed to chief executives, human resources directors, medical directors and workforce-development confederations (WDCs);
- the DH's websites for its press office, the Modernisation Agency and PGME policies (for example, Modernising Medical Careers, Postgraduate Medical Education and Training Board (PMETB), EWTD);
- independent sites for the WDCs and bodies associated with PGME (for example, the Conference of Postgraduate Medical Deans (COPMED), regional postgraduate deaneries and Royal Colleges).

It should be noted that in March 2004, as the project was ending, the DH re-launched its website and the department's URLs that had been used for these scanning activities became invalid.

### **1.3.3 Survey of documents from Royal Colleges and specialist associations**

In this component of the project, published reports of Royal Colleges, Joint Higher Training Committees and professional associations were surveyed and reviewed. The work closely replicated the document review undertaken in 1996 for the original project on concentration and choice in the provision of hospital services (Dowie and Sykes, 1996). However, unlike the earlier survey, when the relevant literature was obtained directly from these bodies, documents for the 2003 survey were identified by systematically searching the websites of the respective bodies. To ensure completeness, checks were made during the interviews with the college representatives. In addition, literature searches were made of journals sponsored by the Royal Colleges and professional associations. The survey covered publication dates between August 1996, when the previous survey was completed, and December 2003. The relevant documents were reviewed and the guidance summarised using the data-extraction template developed for the 1996 review. The methods for this survey are described in greater detail in Appendix 5, which also presents the results of the survey and completed templates.

### **1.3.4 Survey of WDC business plans**

The DH's educational levy for PGME in England is dispersed through strategic health authorities to WDCs linked to regional postgraduate deaneries. A survey of WDC business plans was undertaken to see whether they incorporated financial commitments to postgraduate medical training. In November 2003 all 28 WDCs in England were contacted initially by email, with follow-up telephone calls as needed, in order to obtain their latest business plan (ideally for 2003/2004). Eighteen (64%) were able to provide a business plan for either 2002/2003 or 2003/2004. In the event, none contained information directly relevant to the research (Section 7).

### **1.3.5 Semi-structured interviews**

PGME is undergoing rapid change. We had intended to undertake postal surveys of tiers of bodies in England concerned with staffing and workforce configurations (in particular, the Care Group Workforce Teams associated with the National Service Frameworks, and WDCs). However, early in the research we discovered that the DH had an ongoing initiative, the Configuring Hospitals Project, which had sought an input from many NHS and partner organisations, including the medical Royal Colleges. A DH report arising from the project, *Keeping the NHS Local – A New Direction of Travel*, was circulated in February 2003 for wide consultation. We felt therefore that survey response rates would be jeopardised because of these other activities. Instead, semi-structured interviews with key stakeholders in PGME were conducted and the interviews became a major resource in identifying the nature of PGME changes and anticipated problems.

The interviews were carried out with representatives of the medical Royal Colleges, the Joint Higher Training Committees, regional postgraduate deaneries and other relevant institutions between June 2003 and January

2004. The methods for structuring and conducting the interviews and analysing the transcripts are described in Appendix 3. The institutions and the representatives who were interviewed are cited at the end of Appendix 3.

### **1.3.6 Specialty focus and case studies**

Early in this research it became clear that we were likely to obtain greater insight into the relation between changes in postgraduate medical education/training and service delivery by focusing interviews on the specialty rather than the trust. The speed and nature of changes in training with potential impact on service delivery varied significantly by specialty. The impact on an individual trust of changes in general surgery are likely to be quite different from the impact of changes in paediatrics. Problems that trusts encountered in achieving compliance with the EWTD were different for accident and emergency (A&E) services and medical services. The importance of a focus on the specialty rather than the trust was reinforced by independent but concurrent work on the impact of introducing patient choice into the NHS. In many cases trusts that lost patients in some specialties gained patients in others. The dynamic of choice was in the specialty, not the trust as a whole (Dawson *et al.*, 2004).

To illustrate the markedly different inter-specialty staffing patterns to be found in district hospitals, case studies covering of 10 acute specialties in two single-district general hospital (DGH) trusts were undertaken. The trusts in southern England were chosen opportunistically, but they were considered to be typical examples of single-DGH trusts with an annual income in 2003/2004 of around £100 million. One was on the outskirts of London, the other 60 miles from London. The profile for each specialty showed the composition of the medical or surgical team according to grade, and the out-of-hours rota commitments. Results of the case studies appear in Appendix 2 and their implications are discussed in Section 3.

### **1.3.7 Quantitative analysis**

Available national databases on training posts and hospital medical staffing were identified and their suitability for analysis of policy questions raised in the study examined. Three datasets were finally used for this purpose: the DH's annual 30 September census of hospital medical staffing in England (for 2002); the 2001 census of UK trusts with acute paediatric services undertaken by the Royal College of Paediatrics and Child Health; and the DH's Hospital Episode Statistics (HES) for 2002/2003. It was possible to do some econometric work on emerging patterns of training and staffing and to examine the data requirements for future work on the policy questions. Details of statistical techniques employed are given in Section 6, whereas Section 8 describes scoping of the HES data for indicators of 'access'.

## **1.4 Structure of the report**

In Section 2 we identify the major organisations of importance to understanding current changes in PGME and workforce planning. Section 3

provides essential background information on the role of trainees in the hospital workforce. Section 4 summarises the key findings of this study on changes to the curricula and training requirements of junior doctors. Section 5 reviews the evolution of the New Deal and implications of the EWTD for training and hospital staffing. Section 6 explains the new approach of the DH to promoting a more equitable allocation of trainees and provides an initial econometric examination of the contribution of trainees to service delivery as measured by hospital admissions. Section 7 draws together some of the financial issues that emerged from this study. Section 8 examines the scope for modelling the impact on access of changing patterns of service configuration using routine data. Section 10 summarises our conclusions.

We have not provided a single bibliography at the end of the report. Due to the very different topics addressed in each section, it was decided it would be easier for the reader wishing to pursue particular issues if references were given at the end of each section and/or attached to relevant tables.

## **1.5 References**

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## Section 2 Organisation of PGME

The system for directing, monitoring and control of PGME is in the process of major change. The central element of these changes is the attempt to integrate postgraduate medical education and training with the wider service needs of the NHS.

### **2.1 The Postgraduate Medical Education and Training Board**

Potentially the most important change is the creation of the Postgraduate Medical Education and Training Board (PMETB). The Board was established by legislation in 2003 with most members appointed by October 2003. In September 2005 it will assume legal responsibility for:

- approving programmes of training in postgraduate medical education and training and quality assuring their local delivery;
- prescribing the standards required for entry to the Specialist Register and the General Practitioner Register;
- prescribing the standards required for the award of certificates of completion of training;
- issuing Certificates of Completion of Training;
- assessing the degree of equivalence of doctors who have not obtained certification that automatically entitles them to inclusion in either of the Registers, but who have undertaken other training.

These functions had previously been exercised by the Specialist Training Authority (STA) and the Joint Committee on Postgraduate Training for General Practice (JCPTGP), with Royal Colleges and the regional postgraduate deaneries acting as their agents.

The STA, since 1996, had been the UK competent authority for responsibility for postgraduate medicine in hospitals, while the JCPTGP looked after postgraduate medical training in primary care. These two bodies issued certificates of completion of training to doctors pursuing careers as hospital consultants or general practitioners (GPs). Now these functions are being subsumed by the PMETB and a fifth of the Board's members are practising GPs. The medical Royal Colleges and their higher training committees undertake standard-setting activities for specialty training by developing training curricula, recognising the suitability of hospitals to provide training and formulating entry qualifications required for training in their specialties. The Colleges will continue with these responsibilities. Regional postgraduate deans are responsible for managing the delivery of postgraduate medical education and training across geographical areas (deaneries). They will retain these responsibilities to standards set by the PMETB, while remaining accountable within the NHS for so doing.

One reason for replacing the previous arrangements with the PMETB had been the concern that NHS service interests were not adequately addressed by those responsible for the design and implementation of PGME. A key objective of the new Board is to 'ensure that the standards it sets meet the needs of those engaging the services of GPs or specialists in the NHS.' The objective of better aligning education and training with NHS requirements is reflected in the composition of the PMETB. 'The representation of the interests of the NHS and other employers (for example, the universities, the private sector, industry, etc) and the Postgraduate Deans on the Board and its subcommittees should ensure that standards set *will be compatible with the need to provide an efficient and patient-centred service*' (emphasis added).

This remit places the new PMETB at the centre of major developments currently underway. Examples include the redesign of the first 2 years of postgraduate training and the integration of junior doctors not currently in training posts (Modernising Medical Careers) and emerging recommendations to create a 'generalist' consultant with advanced specialist training pursued by relatively fewer consultants. The PMETB will also be responsible for ensuring that the UK observes European Community legal requirements relating to postgraduate medical education and training and will have to deal with medical manpower issues arising from the expansion of the EU. The PMETB is only beginning its work and it is too early to say whether this creation of a new organisation will lead to significant change at the interface of medical education and NHS service provision. See Figure 2.1.

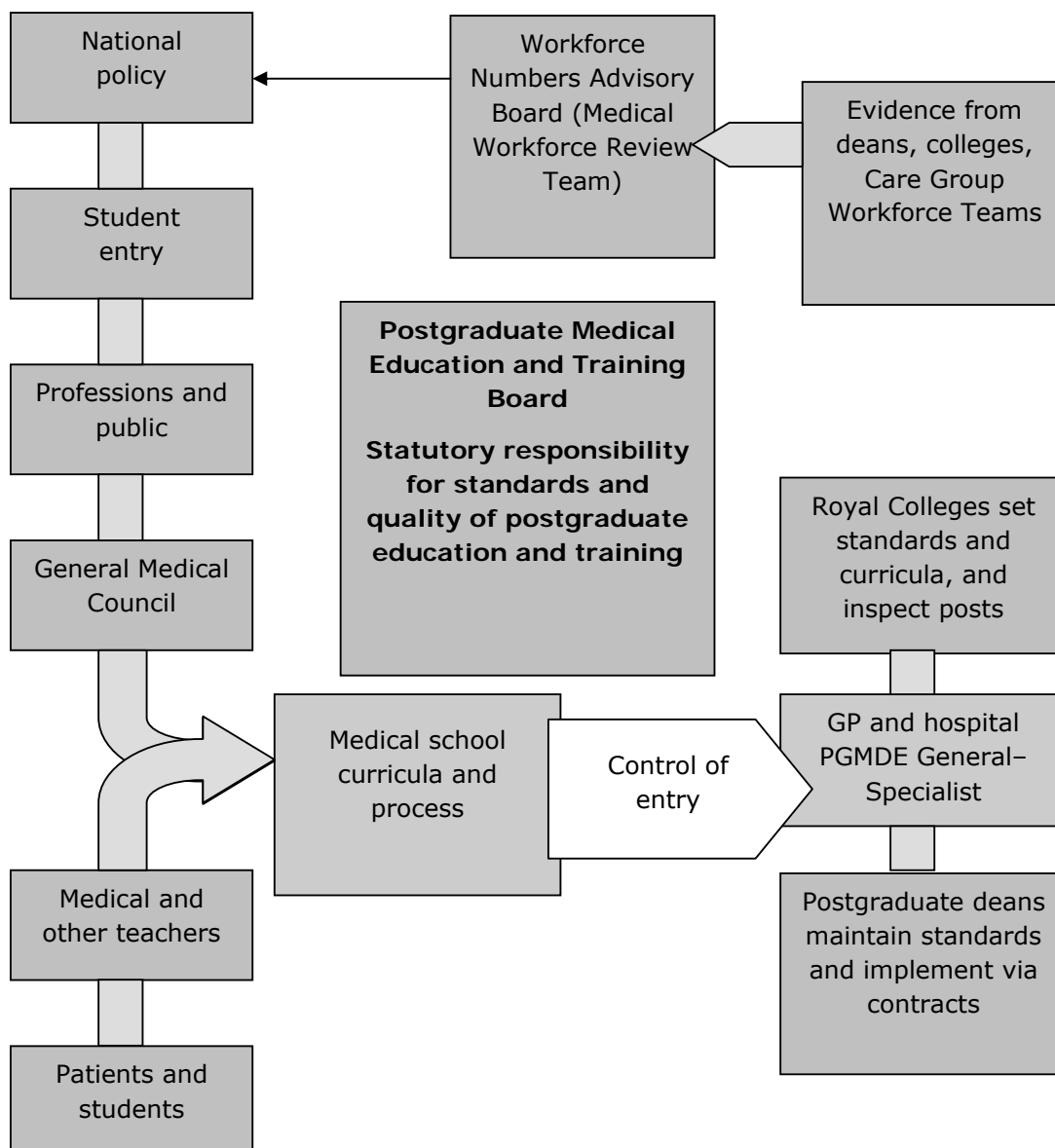
## **2.2 Workforce planning**

In addition to the PMETB, there has been a reorganisation of workforce planning to better integrate training with developments planned for patient care in the NHS. WDCs were established in 2001 to plan the whole health-care workforce. They were to focus on local labour markets and the needs of commissioners. WDCs were allocated the budgets for postgraduate medical training and, with the postgraduate deans, were to deliver training programmes. However, during 2003 important changes were introduced. Some WDCs are being absorbed by Strategic Health Authorities, others are continuing as independent organisations and others are having some of their functions transferred. At present it is too early to judge the outcome of this process. However, as Figure 2.2 makes clear, the intention of the reorganisations since 2001 has been to better integrate workforce planning with service developments across the local health economy.

**Figure 2.1 An overview of PGME**

PGMDE, postgraduate medical and dental education.

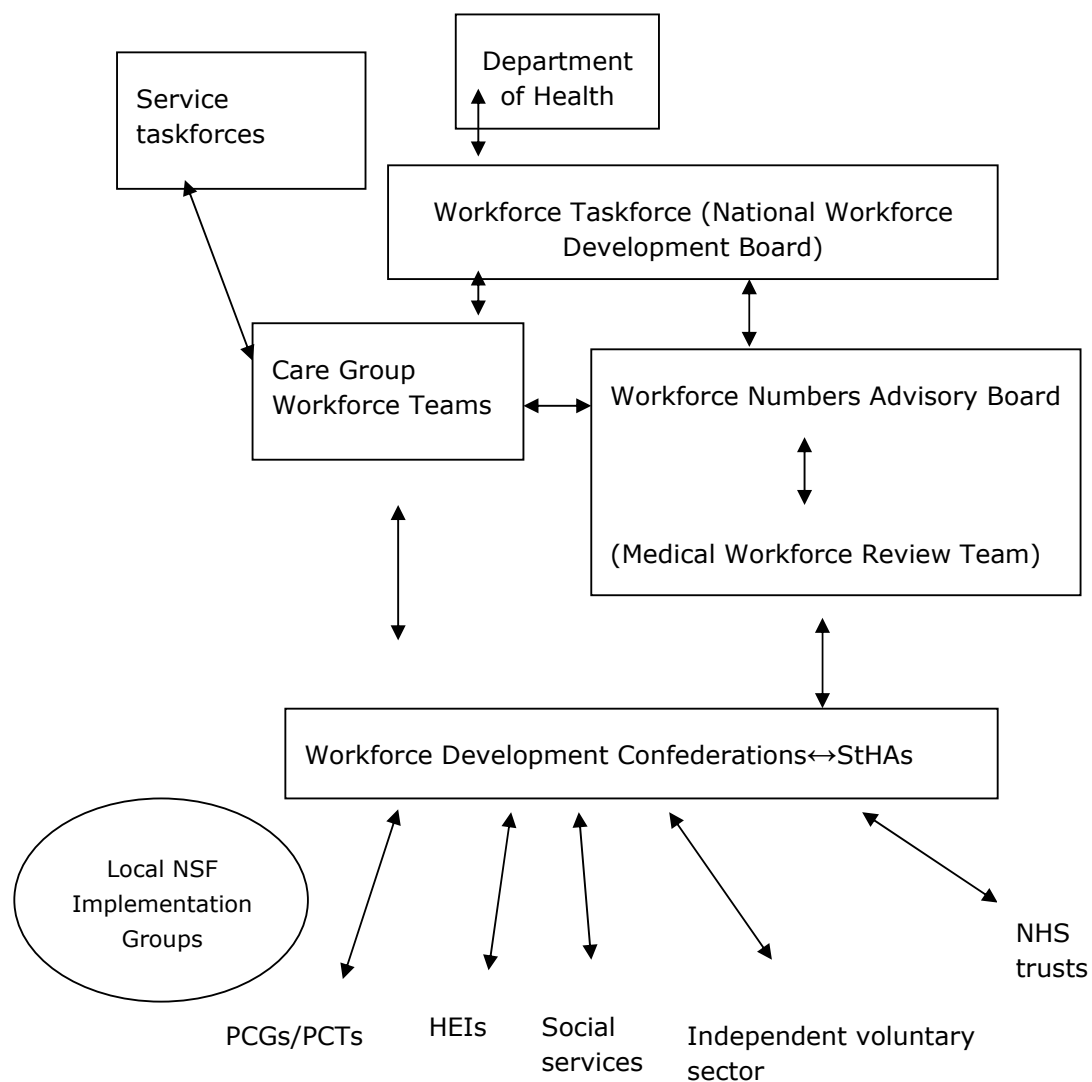
Adapted from: An overview of COPMED. [www.copmed.org.uk/AboutUs/index.html](http://www.copmed.org.uk/AboutUs/index.html)



**Figure 2.2 Workforce planning arrangements**

*NSF, National Service Framework; StHA, Strategic Health Authority.*

*Source: Sands, T. 2002. Physician planning: current frameworks. The approach in England. Leeds: Department of Health*



## **2.3 Regional deaneries**

Regional postgraduate medical deans are supported in the deaneries by networks of advisors and advisory committees at regional, trust and hospital level. An illustration of the infrastructure for hospital postgraduate training is shown in Box 2.1. It is worth noting that the structures are being extended as new responsibilities are identified for implementing the policy of Modernising Medical Careers. The deaneries have parallel networks for GP training overseen by a regional director of postgraduate general practice education, and networks for dental education headed by a dental dean. The postgraduate medical deans are the budget holders for postgraduate training across the deaneries – a responsibility that is discussed later in this report. The medical deans meet together in a UK body known as the Conference of Postgraduate Medical Deans (COPMED).

### **Box 2.1 Organisational responsibilities for supporting hospital doctors in training within Postgraduate Medical Deaneries in England**

#### Overall responsibility

- Postgraduate medical dean and associate deans
- Programme director for the Modernising Medical Careers programme

#### Region-level responsibilities

- Regional adviser for each specialty
- Specialty training committees: broadly, one for most specialties (30–50 committees depending on the size of the deanery), each with a chairman from the specialty
- Programme director for each specialty who is responsible for the co-ordination of the regional higher training rotation programme
- College regional specialty advisers, appointed by the colleges, and who are involved in recruitment, managing training and assistance with in-training assessments (record-in-training assessment; RITA)

#### Trust-level responsibilities

- Clinical tutors, one for each district hospital, appointed by the Dean and who oversee the educational programmes locally and study leave arrangements for senior house officers
- College tutors appointed by the colleges
- Tutor for pre-registration house officers
- Programme director for the local Modernising Medical Careers programme

*Notes: (i) The professionals appointed to the above positions or committees are NHS consultants; few have sessions funded separately by the deanery to cover these responsibilities (clinical tutors are an exception). (ii) The directorships for the Modernising Medical Careers programmes at regional and local levels have*

recently been identified and may be taken up by pre-registration house officer tutors. (iii) Each postgraduate dean acts as lead dean nationally for a number of specialties (see [www.copmed.org.uk/Publications/LeadDeans/index.html](http://www.copmed.org.uk/Publications/LeadDeans/index.html)). (iv) There are separate organisational arrangements for general practice and dentistry.

## **2.4 Summary**

In this review of institutional change we used as our initial sources of information official documents setting out legal and policy frameworks for the new organisations. We then explored some of the implications of the changes announced or being introduced with regional postgraduate deans and members of the STA. There is no doubt that major institutional changes are in the process of being implemented. The objective is to better integrate postgraduate medical education and training with planning NHS service needs. If these new institutions perform as intended, we can expect future changes in curricula and training requirements to be considered with reference to the impact on service delivery as well as the need to incorporate new developments in medical knowledge into training regimes. If this occurs, the next decade may observe a rebalancing of the role of junior doctors and consultants in producing the doctors of the future and their responsibility for current delivery of patient services.

As documented in Section 4, many of the changes in curricula and training that will facilitate this rebalancing were being considered before the institutional changes outlined in this section were made. This should make it easier for the new PMETB to make early progress with its remit of integrating medical training and service needs. However, the timing of this research was unfortunate in that the work was undertaken during the period when institutional change was being introduced. We have no evidence on how effective these new arrangements will be. This will be the task of future work monitoring performance of these new organisations.

## **2.5 Principal sources**

Department of Health. 2002a. *Postgraduate Medical Education and Training: the Postgraduate Medical Education and Training Board*. Statement on Policy. London: Department of Health

Department of Health. 2002b. Chief Executive Bulletin, 12–18 April. *Workforce Development Confederations, Functions, Accountabilities and Working Relationships*. London: Department of Health

Department of Health. 2002c. *Primary Care Workforce Planning Framework*. London: Department of Health

Department of Health. 2003. Press release, 6 October 2003. Appointment of members to the Postgraduate Medical and Education Board. London: Department of Health

General Medical Practice and Specialist Medical Education. 2003. Training and Qualifications Order.

*Balancing the Concentration of Services Required for Professional Training*

Sands, T. 2002, *Physician planning: current frameworks. The approach in England*. Leeds, Department of Health

## Section 3 Staffing patterns for hospital specialties

This report attempts to identify whether changes in PGME are leading to greater concentration of services. Any observed change in service configuration will be the product of changes in the medical curriculum and changes led by the need to reduce the hours of junior doctors to comply with the New Deal and the EWTD. Early in this work it became obvious that the trust was not the relevant unit of analysis. PGME is organised by specialty and problems of staffing to comply with reduced working hours are specialty-specific. There is now a virtual moratorium on the closure or merger of trusts but reconfiguration will be taking place at the specialty level.

This section describes key differences in medical staffing of hospitals by specialty. No single data source is adequate. At the national level the annual workforce census can be used to see the difference between specialties in the dependence on junior doctors to supply services. However, census data relate to trusts and many trusts are composed of more than one hospital. It is not possible to discern from DH census data whether some of the hospitals within a trust will face staffing difficulties. A number of Royal Colleges and specialist associations conduct a census of their own. These frequently contain data on staffing by grade at the hospital or site level. However, differences in methodology, timing and coverage mean they cannot be linked to observe the relation between specialties at the hospital level. In order to see how patterns of staffing by specialty varies within a hospital, it was necessary to carry out case studies. We selected two medium-size (approximately 600 beds), single-site trusts. Detailed information was obtained on staffing by specialty for 10 key specialties. In the case studies it was also possible to identify the working patterns within each specialty and the degree of compliance with regulations on junior doctors' hours.

The objective of this section is to identify the extent to which different specialties depend on trainee doctors as part of the labour force. It provides background information important to understanding developments discussed elsewhere in the report.

### **3.1 Staffing**

Medical services in NHS hospitals in the UK are staffed by three main groups of doctors. Consultants are appointed to tenured career posts and are clinically autonomous. 'Junior' doctors receive time-limited appointments and are clinically responsible to consultant supervisors. Non-consultant career grade (NCCG) doctors form a third, much smaller group. They include associate specialists and staff doctors. (Other doctors with sessional contracts (for example clinical assistants and hospital practitioners) are omitted from this discussion.)

The category of junior doctor is currently made up of two groups:

- doctors in training, who occupy hospital posts that have been formally recognised for pre-registration or postgraduate training;
- doctors equivalent in experience to doctors in training, who occupy parallel hospital posts that have not been formally recognised for training purposes.

### **3.1.1 Training grades and titles used**

There are three progressive grades for doctors in training.

- (i) House officer (HO) grade: filled primarily by medical graduates completing a year of clinical practice required for full registration (pre-registration HOs; PRHOs).
- (ii) Senior house officer (SHO) grade: for doctors in their second, third or fourth clinical year working to complete basic training in a specialty or to fulfil training requirements for general practice.
- (iii) Specialist registrar (SpR) grade: doctors training as SpRs to obtain a certificate of completion of specialist training (CCST). Once awarded a CCST an SpR may be appointed to a consultant post in a hospital trust.

Doctors in the training grades are normally contracted to undertake out-of-hours duties routinely and on a regular basis. However, special arrangements are negotiated for doctors employed part time (i.e. for flexible trainees).

### **3.1.2 Trust doctors in non-recognised posts**

Doctors appointed to non-recognised posts are commonly known as trust doctors, regardless of whether they are SHO or SpR equivalents, and they are normally appointed on contracts with similar terms to their trainee equivalents. Thus their contracts include an obligation to join the roster arrangements for providing out-of-hours covers for their specialty. The drivers for setting up non-recognised posts and the funding implications are discussed in Sections 5 and 6.

### **3.1.3 Trends in the ratio of consultants to doctors in training**

Over the decade 1993–2003 the number of consultants in hospital and public-health medicine in England grew by 5.0% on average each year and the number of junior doctors (i.e. doctors in training and trust doctors) grew by 3.5%. Consequently, the ratio of doctors in training to consultants fell over the period from 1.51 to 1.30. The ratio was even lower (1.2) in 2001, but an up turn occurred because of a large expansion in junior staff (Department of Health, 2004). The annual census returns from NHS employers, as at 30 September, do not distinguish between doctors occupying recognised and unrecognised training posts. However, we can assume that a substantial amount of the growth in junior staff over the 2 years, 2002–2003, was accounted for by an expansion in numbers of trust doctor (see Section 5).

### **3.1.4 Trends for women in the medical workforce and non-UK trained doctors**

#### **Women**

Levels in the participation of women in the medical workforce also rose substantially over the decade 1993–2003. The proportion of consultants who were female grew from 17% in 1993 to 25% in 2003. In the higher training grade (SpRs), 39% were women in 2003, indicating that the percentage in the consultant grade is set to rise even further (Department of Health, 2004).

According to the workforce statistics, experienced women doctors are much more likely to work part time than their male counterparts. In 2003, 31% of female consultants were part time compared with 10% for male consultants. Among SpRs, 17% of women were part time whereas the rate for male SpRs was less than 2%.

#### **Non-UK qualified doctors**

Thirty-five per cent of hospital medical staff in England in 2003 had qualified outside the UK (30% were from outside the European Economic Area). The 2003 rate was 4% higher than for the years 1998–2000. There were, however, inter-grade variations in the rates. Table 3.1 shows that non-UK doctors predominated in the NCCG grades of associate specialist and staff doctor.

**Table 3.1 Hospital and public-health medicine doctors qualified outside the UK for England, 1998 and 2003**

Grade of staff	Proportion of staff qualified outside the UK (%)	
	1998	2003
Consultant	21	24
Associate specialist	69	65
Staff	70	72
SpR	34	38
SHO	38	42
HO*	8	16
All hospital medical staff	31	35

*\*The rates for the two years are not strictly comparable.*

*Source: Bulletin 2002/04; Department of Health (2004).*

### **3.1.5 NCCG doctors**

Doctors in the associate specialist and staff grades formed 16% of all 44 576 doctors in non-consultant grades in 2003. Nearly 40% of non-consultant career grade (NCCG) doctors were women, and among the NCCG women,

41% worked part time (Department of Health, 2004). Associate specialists are relatively few in number (there were 2001 in 2003); they are experienced doctors whose posts lapse when they cease to be employed as associate specialists. Staff doctors are equivalent to SpRs in experience; they occupy established posts that are recurrent. NCCGs are not automatically obliged to undertake out-of-hours duties; rather, it depends upon their personal contracts. However, many provide out-of-hours cover, usually by joining the middle-grade rosters if they are staff doctors.

### **3.1.6 Organisation of out-of-hours cover**

The main staffing problems of adjusting to the New Deal and EWTD relate to out-of-hours working. There are three models in the NHS for organising rosters to provide out-of-hours cover:

- on-call rotas,
- partial shifts,
- full shifts.

The choice of a model for a hospital specialty is influenced by the number of doctors available to join, on a regular basis, the roster and the volume of acute clinical care occurring outside normal working hours. Account must be taken also of requirements over contracted hours of work and regulations over rest periods. Acute specialties usually have three or four rosters and each roster may be differently configured:

- consultant roster,
- middle-grade roster (SpRs, trust doctors and NCCG doctors),
- SHO-grade roster (i.e. SHOs and trust doctors) and
- HO roster (PRHOs) in general medicine and general surgery.

The three models for doctors on rosters are outlined briefly.

#### ***On-call rotas***

Doctors in a department work a normal day from Monday to Friday and are on call in rotation for the rest of the 24-hour period, and for weekends. The frequency of on-call duty depends on the number of doctors providing cover on the roster (for example, three or four doctors) and is expressed as a ration (1:3 or 1:4, etc).

#### ***Partial shifts***

Doctors work normal weekdays most of the time but at intervals they work a different duty, for instance a week or half-week of nights every fourth week, or full weekends or split weekends. Rest days are taken in compensation. Partial shifts are commonly of two kinds: 16-hour, whereby the longest continuous duty (weekdays and weekends) is 16 hours; and 24-hour, whereby the longest continuous duty period is 24 hours. Partial shifts are appropriate where there is a significant routine workload during the day and where doctors are required to work for a substantial proportion of the time during their additional duty hours.

### **Full shifts**

Doctors work on a shift on a regular basis and they rotate around the shift pattern, which includes days of rest. Doctors on a full-shift system work effectively for the whole time they are on duty. A full shift is appropriate where the work intensity is high and potentially evenly distributed over the shifts in the 24-hour period.

## **3.2 Relative importance of trainees by specialty: national workforce census data**

The national workforce census for England 2002 enabled us to observe differences between specialties in the relative importance of trainees in the overall medical workforce (Department of Health. 2003). We divided the workforce by trust into three groups: trainees, NCCGs and consultants. In Figures 3.1–3.4 the horizontal axis gives the proportion of trainees in the workforce and the vertical axis the proportion of NCCG doctors. Any point on the diagonal represents 100% of the workforce. For example, where an observation shows 45% trainees and 30% non-career grades, the remaining 25% will be consultants. The further an observation is from the diagonal, the higher the proportion of consultants. Thus the vertical (or horizontal) distance from a point to the upper boundary measures the proportion of consultants. The circles represent non-teaching trusts and the crosses represent teaching trusts. The points are 'jittered' so that two trusts which have the same skill mix are shown as two points very close together rather than superimposed.

The figures for the four specialties of anaesthetics, A&E medicine, general medicine and general surgery clearly demonstrate marked inter-specialty differences in patterns of staffing. Within each specialty, the figures likewise show considerable variations in the staffing patterns of teaching and non-teaching trusts. For ease of comparison the four specialties are discussed in pairs. Similar figures were prepared for obstetrics and gynaecology (O&G), paediatrics, trauma and orthopaedics, and urology, and are shown in Appendix 4.

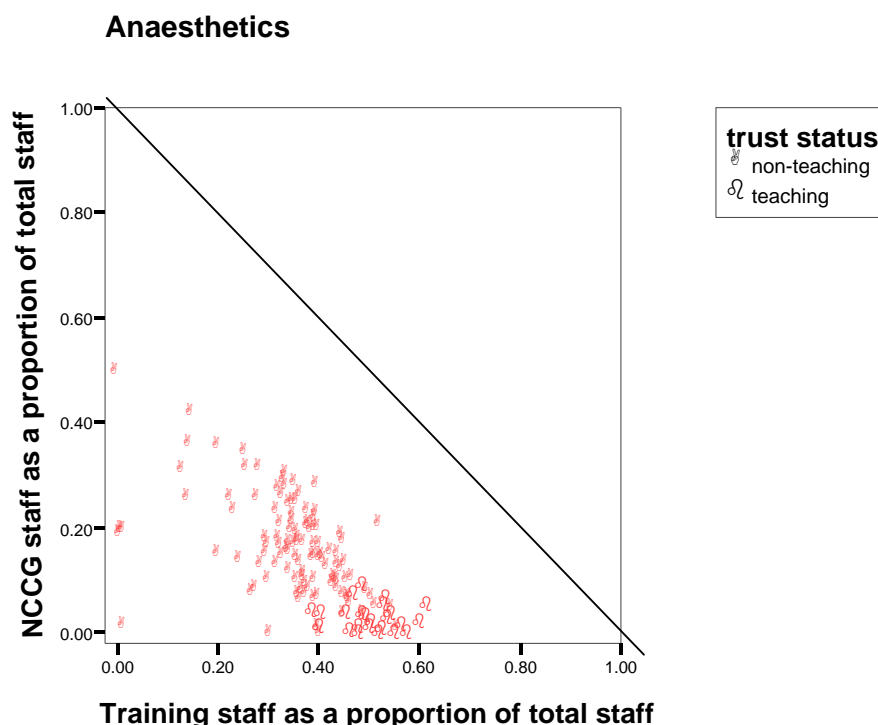
Figure 3.1 Proportions of NCCG doctors and trainee staff for A&E



### 3.2.1 Anaesthetics and A&E medicine

These specialties deal with high volumes of patients: A&E staff may see in excess of 50 000 emergency attenders annually, whereas anaesthetists provide anaesthesia for surgical caseloads, obstetrics and other patient groups. They deliver other clinical services (for example pain relief) and support many departments across a hospital. Both specialties have relatively small numbers of identified beds for admitting patients. The specialties are strikingly different however in terms of their staffing patterns and the reasons are historical. Anaesthetics is a long-established specialty (a college Faculty of Anaesthetists was formed at the inauguration of the NHS in 1948). Over the years it has become very much a consultant-provided specialty although departments have retained experienced part-time staff where possible (employed usually as NCCG staff). Figure 3.2 indicates, however, that many teaching trusts placed little or no reliance on NCCG staff in 2002. A&E medicine, in contrast, is a relatively new specialty, the Faculty of Accident and Emergency Medicine being set up in 1993. Over the years, managerial responsibilities for A&E services were held by related specialties, such as trauma and orthopaedics, and training programmes for A&E consultants, who may be surgeons or physicians, were not well developed. Consequently, trusts built up their establishments of consultant staff slowly. The prevailing A&E staffing pattern involves two or three A&E consultants supported by trainees at SHO level working on full shifts and a middle-grade tier, most of whom are NCCG staff.

Figure 3.2 Proportions of NCCG doctors and trainee staff for anaesthetics



### 3.2.2 General medicine and general surgery

The term general medicine in Figure 3.3 covers doctors recorded in the manpower census in cardiology, dermatology, endocrine and diabetes, gastroenterology, geriatric medicine, neurology and rheumatology. The reason for selecting these medical specialties was that they were the specialties for which HES could be linked as part of another data-analysis exercise for this report. Nevertheless, in most district hospitals, the doctors working in these specialties usually join the acute rotas for 'non-selected' medical admissions. Consultant dermatologists are an exception, and respiratory medicine physicians would normally be included. The definition of general surgery, in contrast, was confined simply to the specialty of general surgery. Urology was analysed separately.

Figure 3.3 Proportions of NCCG doctors and trainee staff for general medicine

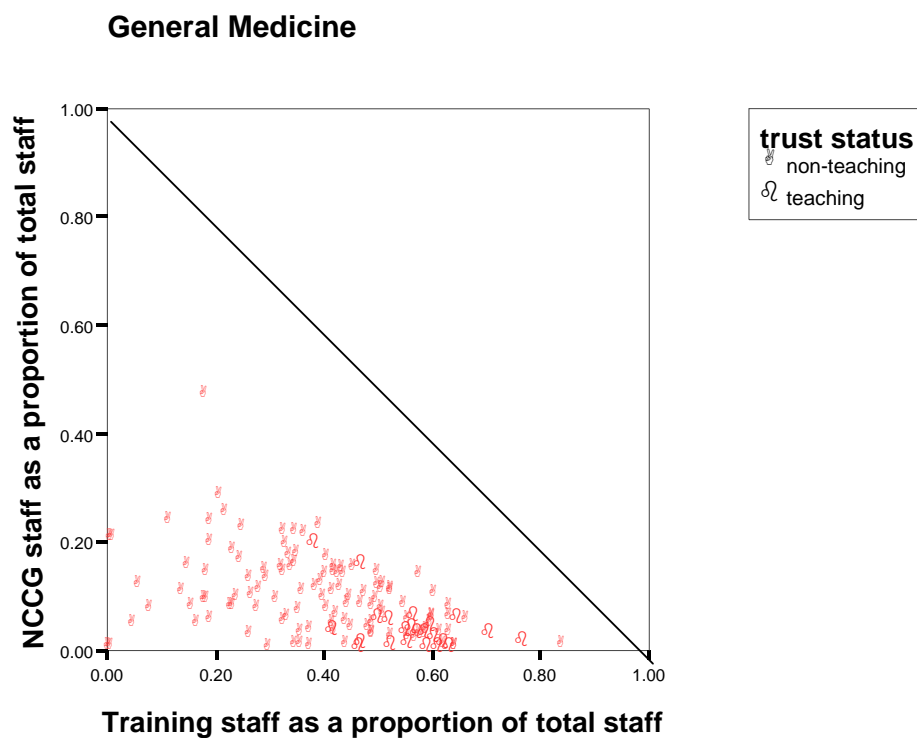


Figure 3.4 Proportions of NCCG doctors and trainee staff for general surgery



There are marked dissimilarities between general medicine and general surgery in Figures 3.3 and 3.4, even though both are typically staffed by four tiers of doctors: consultants, middle grade staff, SHO staff and PRHOs.

- Many trusts in Figure 3.3 had general medical services that were, relatively speaking, consultant-provided. This may seem an unlikely finding, the results having possibly been weighted by the inclusion of dermatology. But in two case studies of middle-sized district hospitals presented in Appendix 2, 37% of the 'general' medical staff were consultants (including locum consultants).
- With general surgery, the highly concentrated pattern of teaching and non-teaching trusts in the lower right-hand corner of Figure 3.4 is a legacy of the traditional surgical firm consisting of a consultant, SpR, SHO and PRHO, although with increasing amounts of sharing of trainees within consultant teams happening nowadays.

Careful inspection of the two figures shows that the two specialties were similarly dependent upon NCCG staff – for the great majority of trusts these doctors formed less than 20% of the total medical and surgical establishment.

These plots of labour mix suggest three broad conclusions:

- all specialties use a great variety of mixes of the different types of staff to produce care;
- there is as much variation across teaching trusts as non-teaching trusts;
- more of the variation is due to differences in the ratios of trainees to NCCGs than to variations in the consultant proportions: the scatter-plots tend to have a negative slope.

Given the nationally negotiated salary structure which has relatively little regional variation it is unlikely that variations in skill mix arise from differences in relative input prices. Since there are considerable variations across teaching and non-teaching trusts, the variations cannot be solely due to the fact that teaching trusts must produce both patient care and medical education. Nor is it the case that the difference in labour mix is accounted for by the level of output (admissions). The two most likely, and not necessarily mutually exclusive, explanations are (a) trusts have constraints on their ability to attract different types of staff so that the relative shadow prices of staff are much more dispersed than the nominal relative prices and (b) trusts do not seek to minimise their production costs: they are complex organisations attempting to meet the competing demands of several groups of stakeholders and the relative influence of these stakeholders varies across trusts and specialties.

### ***3.3 Inter-specialty variations in staffing patterns***

The dependence of trusts on trainees to deliver services differs markedly by specialty. Within some specialties the service delivery contribution of trainees may be met by non-career grade doctors and it is clear from national data that non-teaching trusts are relatively more dependent on non-trainees for service delivery. The analysis of national workforce data confirms the

information obtained from the Royal Colleges that the role of trainees in service provision differs significantly from one specialty to another.

As mentioned earlier, one problem with the national workforce data is that it reports staffing by trust and not by site. A trust may be made up of several hospitals but it is the situation at the hospital level that is of most relevance to patients. As an additional check that research into the impact of changes in postgraduate medical education and training is best approached at the specialty level, we undertook two case studies to obtain site-specific information on staffing across all acute specialties within a hospital. We wanted to examine the extent to which the role of trainees in delivering service varied by specialty within a single hospital. Data collected at this level of detail also permitted analysis of differences by specialty within the same hospital in the reconfiguration of staffing to meet EWTD requirements.

Details of the case studies are given in Appendix 2. The results were consistent with information from the Royal Colleges and the national workforce census. The variation in the role of trainees by specialty within a single-site hospital is very large. It is virtually impossible to generalise about a trust per se.

### **3.4 Summary**

Examination of the implications of changes in postgraduate medical education and training on service delivery requires an appreciation of the role of trainees in the staffing of hospitals and the patterns of work evolving to meet EWTD. Information we had from professional organisations suggested that it would not be useful to generalise across specialties but that a specialty-specific approach was called for. To examine this issue we used two types of evidence, the national workforce census and data that we collected from two hospitals. The variation between acute specialties is striking. An appreciation of the differences in staffing by specialty is useful in understanding the impact of the main policies to be discussed in the body of this report. Specialties with relatively few trainees per consultant are in a better position to cope with the changing pattern of PGME discussed in the next section. Specialties where there is a relatively high proportion of non-career grade doctors to trainees may be particularly affected by the policy initiatives under Modernising Medical Careers (discussed later in this report). Within a trust the problems of reorganising services to become EWTD-compliant will vary significantly by specialty.

### **3.5 References**

- Department of Health. 2003. *NHS Hospital, Public Health Medicine and Community Health Service Medical and Dental Workforce Census England at 30 September 2002*. London: Department of Health
- Department of Health. 2004. *Hospital, Public Health Medicine and Community Health Services Medical and Dental staff in England: 1993-2003*. Bulletin 2004/04. London: Department of Health

## Section 4 Changes in training curricula and training progression

### **4.1 Introduction**

In this section we describe the way in which training curricula for hospital doctors have evolved since the earlier review (Dowie and Sykes, 1996), and whether curricula still have implications for structuring hospital services. The section also covers the Modernising Medical Careers policy, now being implemented, that will amend the framework for training. The primary sources for the section are the documents on training guidance that were assembled in 2003, supplemented by other published sources and insights gained from the interviews with representatives of the Royal Colleges, faculties and postgraduate deaneries.

The appendices to this report provide an account of the methods used for the documents survey and presents templates identifying those documents containing guidance with service implications. The appendices also assess the templates to see whether or not the guidance was directly relevant to the scale of services (in terms of minimum caseloads or staffing levels). Comparisons are drawn between the 2003 survey and the previous survey in 1996. This section goes a step further and examines the guidance with volume implications in 2003. But first the salient features of postgraduate medical training arrangements are outlined.

The responsibility for setting standards for postgraduate medical training is vested in the universities and General Medical Council for pre-registration training, the medical Royal Colleges and their faculties for basic specialist training and the joint higher training committees of the colleges and faculties for higher specialist training. Overarching responsibility will lie with the PMETB from September 2005. The PMETB (refer to Figure 2.1) is taking over the functions of the STA, which, since 12 January 1996, has approved doctors for entry to the Specialist Register by approving training programmes and curricula and awarding CCSTs against these approved criteria. They can then take up substantive NHS consultant posts.

The PMETB will also take over the functions of the JCPTGP, which has statutory responsibilities covering the training in hospital and primary care for doctors entering general practice. This section does not, however, cover the curricula for training GPs, nor the higher training arrangements for doctors entering pathology and radiology or public health. Doctors entering these careers normally undertake early post-registration training in acute hospital specialties and are exposed to the same clinical pressures as trainees planning careers within these specialties. The conditions of service are the same (for example, in providing out-of-hours cover) and they are expected to acquire the same competency levels, even though they will not be studying for the specialties' examinations. Thus the discussion in this section on basic specialist training is applicable to all doctors working in acute specialties.

## **4.2 The structure of post-registration training in hospitals**

Having become fully registered with the General Medical Council after completing 12 months of PRHO training, doctors planning a career in hospital services must undertake two levels of training:

- basic specialist training, which must take a minimum of 2 years, and
- higher specialist training, taking typically 6.5 years as a minimum.

Having been awarded a CCST a doctor may then take many months applying for, and finally taking up, a hospital consultant post. In 2003 more than 55 hospital specialties were recognised for higher training leading to the award of a CCST and they are listed in Table 4.1. The 22 specialties with an asterisk were covered by the project's document survey.

**Table 4.1 Hospital specialties in which a CCST is awarded**

<b>Medical</b>	<b>Surgical</b>
Cardiology*	Cardiothoracic surgery
Dermatology*	General surgery*
Endocrinology and diabetes mellitus*	Neurosurgery
Gastroenterology*	Oral and maxillo-facial surgery
General (internal) medicine*	Otolaryngology*
Genitourinary medicine	Paediatric surgery
Geriatric medicine*	Plastic surgery
Haematology	Trauma and orthopaedic surgery*
Immunology	
Neurology*	<b>Urology*</b>
Renal medicine*	
Respiratory medicine*	<b>Pathology</b>
Rheumatology*	Chemical pathology
	Histopathology
<b>Psychiatry</b>	Medical microbiology and virology
Child and adolescent psychiatry	
General psychiatry*	<b>Other major specialties</b>
Old-age psychiatry*	A&E medicine*
	Anaesthetics*
<b>Radiology</b>	Paediatrics*
Clinical radiology	Obstetrics and gynaecology*
Clinical oncology	Ophthalmology*
<b>Other (smaller) specialties</b>	
Allergy; audiological medicine; clinical neurophysiology; clinical pharmacology and therapeutics; clinical cytogenetics and molecular genetics; clinical genetics; forensic psychiatry; infectious diseases; intensive care medicine; medical oncology; medical ophthalmology*; nuclear medicine; occupational medicine; psychiatry of learning disability; paediatric cardiology; palliative medicine; psychotherapy; pharmaceutical medicine; rehabilitation medicine; tropical medicine	

*The 22 specialties with an asterisk were covered by the project's document survey.*

### **4.3 The role of the Royal Colleges' examinations**

The Royal Colleges exercise their authority in three ways: by awarding postgraduate qualifications to doctors in training, by setting standards and developing curricula for clinical training and, as agents of the STA, by accrediting hospitals for training purposes. The examination function is historical: doctors may be elected members or fellows of the respective colleges once they have passed the diploma examinations. But these qualifications also have an important role in furthering the training of doctors for employment in the NHS.

Table 4.2 summarises the structure of examinations for membership or fellowship of the Royal Colleges responsible for hospital specialties and the minimum time periods that must elapse after obtaining a primary medical qualification (for example, a university degree) prior to commencing pre-registration training. For all qualifications, three or four exams or assessments must be completed. Otherwise the qualifications differ one from another in various ways.

- The minimum duration of time that must elapse before the final examination ranges from 2.5 years for physicians and paediatricians to 7 years for A&E medicine specialists; the median (and mean) interval is 4 years.
- For three specialty groups – physicians, paediatricians and psychiatrists – doctors need to pass the final examinations before entering higher training. (Three Royal Colleges of Physicians in London, Edinburgh and Glasgow share a common membership exam.)
- Surgeons need first to pass the membership examination of one of the surgical Royal Colleges before entering higher training. In due course they must pass Intercollegiate Specialty Examination for their specialty from year 4 of the higher surgical training programme. (There is a surgical college in England, two in Scotland (Edinburgh and Glasgow) and another in Dublin and they have set up Intercollegiate Specialty Boards for the respective surgical specialties.)
- Doctors in anaesthetics, ophthalmology, and obstetrics and gynaecology need to have passed the earlier examinations for their qualification before entering higher training.
- The specialty groups of radiology and pathology are more flexible over the timing of the earlier examinations within doctors' training programmes.

Although for all specialty groups doctors must obtain the relevant qualification before being awarded a CCST and entered on the Specialist Register, the qualification does not have to be awarded by a UK college; equivalent qualifications from overseas colleges are acceptable.

The legislation establishing the PMETB (Article 14) will permit doctors who are not in training grades (for example, associate specialists and staff doctors) to apply for entry in the Specialist Register even though they have not

completed a higher training programme. The legislation allows for any combination of qualifications or training and experience gained anywhere in the world to be evaluated (Specialist Training Authority, 2004). Thus, the importance of college examination systems in the career progression of NHS hospital medical staff may be moderated.

#### **4.4 Basic specialist training**

When appointed to SHO grade, doctors undertake basic specialist training for 2–3 years or more, depending on their progress with college exams and their success in obtaining a slot (national training number; NTN) in a higher training programme. The system for basic specialist training is currently undergoing revision according to Modernising Medical Careers, and the implications of the re-structuring are discussed later in this section.

Responsibility for standard setting in basic specialist training has lain with the Royal Colleges for many years, although it is now part of the CCST programme under control of the STA (for a historical overview of the system of postgraduate medical education and training, see Dowie, 1987). Over the years the colleges issued guidance on basic training with respect to both content and organisation and from 1996 these had to be ratified by the STA. They defined the amounts of time doctors should spend in different types of post and encouraged the setting up of rotational training programmes whereby posts within, or across, local hospitals are packaged to permit trainees to obtain the requisite range of experience while covered by a single contract of employment.

**Table 4.2 Royal College qualifications of membership and fellowship for hospital specialties: minimum training experience required after obtaining a primary medical qualification (prior to prePRHO experience)**

<b>College qualification</b>	<b>Minimum time to final exam after primary medical degree</b>	<b>Minimum duration of time for individual examinations (after receiving primary medical degree)</b>	<b>Minimum requirements of UK training experience</b>	<b>Role of college qualification in NHS training</b>
MRCP (UK)	2.5 years	(a) Part 1: 18 months (b) Part 2 (written): unspecified (c) Part 2 (clinical): 2.5 years	(a) 6 months involving the care of emergency medical patients (b) Near-completion of 2.5 years training is advisable (c) 2.5 years	MRCP (UK) needed to enter higher specialist training
MRCPCH	2.5 years	(a) Part I: 18 months (b) Part II: 2 years (c) Clinical: 2.5 years	(a) Unspecified (b) Unspecified (c) 12 months in posts involving the care of paediatric emergencies	MRCPCH needed to enter higher specialist training
MRCS	3 years (indicative, from 2004)	(a) Part 1: unspecified (b) Part 2: after 12 months (unspecified from 2004) (c) Part 3: unspecified (completion of all parts in 3.5 years from first attempt at Part 2)	(a) Advised to wait until commencing basic surgical training (b) After commencing basic surgical training (c) During basic surgical training	MRCS and CCBST needed to enter higher specialist training (CCBST is awarded after 24 months training in recognised posts)
ISE leading to FRCS	Unspecified	4 years of higher training; evidence from the relevant specialist advisory committee	12 months in UK higher training post (for most potential candidates)	Mandatory precursor to award of CCST
MRCPsych	3.5 years	(a) Part I: 2 years (b) Part II: 3.5 years	(a) 12 months training in a college-approved scheme in 6-month posts (b) 30 months of approved training in a college-approved scheme in posts not	MRCPsych marks the completion of basic specialist training

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			less than 6 months	
FRCA	3.5 years	(a) Primary: 2 years (b) Final: 3.5 years	(a) Has completed 1 year in training posts approved by the Royal College of Anaesthetists (b) Has completed 30 months in the specialty of anaesthesia	Advisable to sit the final exam after spending at least 6 months in an SpR post (i.e. during higher specialist training)
FRCOphth	5.5 years	(a) Part 1: 12 months (b) Part 2: 2 years (c) Part 3 (membership): 2.5 years (d) Fellowship assessment: 5.5 years	(a) Has completed 1 year in HO posts (b) Has completed 1 year's full-time training in ophthalmology (c) Has completed 18 months full time in ophthalmology (d) Having obtained third annual RITA form C during higher specialist training	Part 3 needed to enter higher specialist training; fellowship needed to obtain CCST
MRCOG	5 years (after September 2002)	(a) Part 1: Unspecified (b) Part 2: 5 years	(a) Part 1 exam may be taken at any time (b) 1 year pre-registration (PRHO) training; 4 years in recognised posts in obstetrics and gynaecology; attendance at eight family-planning sessions; appointments to each post to be at least 6 months	MRCOG Part 1 is an entry criterion for higher specialist training; Part 2 is taken during SpR years 1–3 and is needed to complete SpR years 4–5 and for a CCST
FFAEM	7 years	(a) Membership Part A: 18 months (b) Membership Part B: 2 years (c) Fellowship: 7 years	(a) 6 months in an emergency department recognised for training (b) 12 months in recognised emergency departments (c) In final year (i.e. fifth year) of higher specialist training	Qualifications from other colleges are acceptable for higher specialist training; FFAEM is needed to obtain a CCST
FRCR	4.5 years	(a) First: Unspecified (b) Final Part A: from 2.5 years (c) Final Part B: 4.5 years	(a) No requirement to spend any time in a clinical radiology post (b) 18 months in a clinical radiology post	FRCR is required for obtaining CCST in clinical radiology; clinical oncology

			(c) 3.5 years in a clinical radiology training post	requires 1 further year post-FRCR
MRCPath	5 years	(a) Part 1: 3 years (recommended) (b) Part 2: 5 years (recommended)	(a) Recommended after 2 years' specialist training (b) Recommended after 4 years' specialist training	MRCPath is required to obtain a CCST

*Abbreviations: MRCP (UK), Membership of the Royal Colleges of Physicians of the United Kingdom; MRCPCH, Membership of the Royal College of Paediatrics and Child Health; MRCS, Membership of the Royal Colleges of Surgeons of Great Britain and Ireland; CCBST, Certificate of Completion of Basic Surgical Training; ISE, Intercollegiate Specialty Examination; FRCS, Intercollegiate Fellowship of the Royal Colleges of Surgeons of Great Britain and Ireland; MRCPsych, Membership of the Royal College of Psychiatrists; FRCA, Fellowship of the Royal College of Anaesthetists; FRCOphth, Fellowship of the Royal College of Ophthalmologists; MRCOG, Membership of the Royal College of Obstetricians and Gynaecologists; FFAEM, Fellowship of the Faculty of Accident and Emergency Medicine; FRCR, Fellowship of the Royal College of Radiologists; MRCPath, Membership of the Royal College of Pathologists.*

*Sources are given in Section 4.12.2.*

**Table 4.3 Recommended minimum experience for basic specialist training, 2003**

<b>Specialty group</b>	<b>Guidance on training experience</b>
Medicine	18 months to be spent in the admission and early follow up of acute emergencies; for 6 months the emergency take must be unselected and involve admission of an average minimum of 10 patients
Surgery	12 months to be spent in two category I posts that have significant amounts of emergency work (i.e. general surgery, trauma and orthopaedics, A&E medicine) [NB: the guidance re-issued in October 2004 was substantially revised]
Paediatrics	Doctors planning a career in paediatrics need 6 months in a post in a level II or III neonatal unit with a dedicated neonatal on-call rota system
Ophthalmology	2 years spent at prescribed level of training, and during that time SHOs should undertake 50 cataract or other intraocular procedures and 20 Yag laser posterior capsulotomies

*Sources: Royal College of Physicians (2000); Royal College of Surgeons of England (1998); Royal Colleges of Surgeons (2004); Royal College of Paediatrics and Child Health (2003b); Royal College of Ophthalmologists (1999, 2000).*

Table 4.3 identifies the minimum published requirements for basic training for four specialty groups and, in the interviews with college representatives, we were concerned to learn whether the guidance was still current.

- (i) For medicine, the guidance was unchanged. It should be noted that the threshold of 10 unselected emergency patients would hardly act as an exclusion criterion since very few hospitals with acute medical services have fewer than 10 admissions over a 24-hour period. The twin foci in medicine were, instead, developing an innovative system of sub-regional visitations for recognising hospital training programmes and piloting the policy of Modernising Medical Careers.
- (ii) The guidance for basic surgical training was in the process of being updated during 2003 and it was unlikely that the revised guidance would be as explicit over the types of post to be occupied. Indeed, the guidance re-issued in October 2004 no longer categorised posts, but specified instead a minimum of 2 years training in at least four separate surgical specialties and with the flexibility of obtaining experience in related specialties (gynaecology, intensive therapy, ophthalmology and A&E medicine).
- (iii) The guidance on neonatology experience for doctors planning hospital careers as paediatricians was current and there was no suggestion that there were insufficient training slots. However, the specialty was particularly concerned about current SHO staffing levels and the capacity in hospitals to staff children's services out of hours.
- (iv) The guidance for ophthalmology was under review in 2003. The targets per trainee of 50 intraocular procedures and 20 Yag laser treatments over 2 years were not considered to be onerous; nevertheless, in perhaps half the units the targets were not being met even though the annual volumes of procedures being performed were sufficient.

## ***4.5 Accrediting hospital departments for basic training***

In their role as agents of the STA, the Royal Colleges monitor the standards of training offered in SHO posts through a system of quinquennial visits. The Colleges may grant full approval for normally a 5-year period (the periods can vary) or limited approval subject to improvements being implemented, or they may, on rare occasions, recommend to the STA that training recognition be withdrawn (Specialist Training Authority, no date). Hospital posts identified as suitable for GP training are also monitored by the JCPTGP. The hospital visiting panels, which include representatives from the regional postgraduate deanery, take account of:

- contracted hours of duty and hours of work;
- opportunities for undertaking outpatient work, ward work and, where appropriate, work in theatres (operating, anaesthetising);

- levels of consultant staff to provide supervision;
- protected study and educational time;
- education and training resources, such as library facilities, catering, accommodation and other domestic arrangements.

A benchmark for assessing the clinical experience of SHO posts is the rate of patient throughput. Our review of guidance from the Royal Colleges identified clinical caseload benchmarks for basic training in only three specialty groups: medicine, ophthalmology (both mentioned in Table 4.3) and A&E medicine. For the recognition of basic surgical training posts in A&E departments, the advised minimum size for a department was 25 000 new patient attendances per annum (Royal College of Surgeons, 1998), but this guidance was also under review in 2003.

The clinical experience that doctors need for examination purposes must be undertaken in posts that have been recognised for postgraduate training. If, following a visitation and further negotiation, training recognition was finally withdrawn from a hospital department, trainees would not be appointed to the posts and the costs of other doctors occupying the posts would not be partially met from postgraduate deans' budgets. This potentially gave the colleges considerable influence over trusts.

In 2000 new pressures over post recognition were placed on trusts, when the third phase of the DH's New Deal policy was launched aimed at reducing junior doctors' contracted weekly hours from 74 to 56 on average (the New Deal policy is covered in Section 5). To meet this obligation while retaining the prevailing level of acute services, trusts steadily identified local funding for additional posts, particularly at the SHO level. But they were unable to have the posts recognised for SHO training because a ceiling had been placed on the national establishment of SHO posts in 1997 because of the disparity between the number of basic training posts and higher training opportunities (NHS Executive, 1998).

So, even if the clinical experience being offered by the new posts matched the guidance set out by the colleges, they could not be endorsed by the postgraduate deaneries and receive college recognition. Job advertisements placed by trusts for these ad hoc posts had to state that the posts did not have postgraduate deanery recognition.

The magnitude of the impact of the SHO ceiling was illustrated by the careers supplement of the *British Medical Journal* on 12 July 2003. Twelve trusts in England placed advertisements for SHO-equivalent posts in orthopaedics. Only four trusts had the required educational approval for their posts; the others were advertising for 'trust' doctors, with one trust advertising five trust doctor posts and one recognised SHO post.

From the perspective of the colleges in 2003 there was not a common view that more SHO posts were needed. For paediatrics, on the one hand, more SHO posts would facilitate growth in consultant numbers. This is a specialty in which many

SHO post holders, possibly half, take up careers as GPs. In ophthalmology, on the other hand, there had perhaps been too many SHO posts, with the quality of training in some departments being compromised. However, anxieties held by colleges about basic training in the SHO posts may soon be overtaken by new concerns as the programme for Modernising Medical Careers is introduced.

## **4.6 Modernising Medical Careers**

By the late 1990s, the training grades of HO and SpR were closely controlled and monitored. The SHO grade, in contrast, continued to be unwieldy in terms of the absolute numbers of posts, shortage of co-ordinated training programmes, and the imbalance between the numbers of doctors who complete their basic training each year and the available opportunities for entering higher training. In 2002, an innovative framework incorporating both basic training for SHOs and pre-registration training for HOs was proposed by the Chief Medical Officer for the Department of Health (2002b). A UK-wide consultation exercise resulted in the final formulation of the reforms, now known as Modernising Medical Careers (Department of Health, 2003). Although the framework was clarified and regional postgraduate deaneries could begin planning, details had still to be resolved. For example, early in 2004 the General Medical Council's Education Committee (General Medical Council, 2004) entered a consultation exercise over legislative changes that may be needed with respect to PRHO training (for instance, should the requirement that all PRHOs spend at least 3 months in medicine and 3 months in surgery be retained?).

The Modernising Medical Careers framework has two main components: the introduction of a 2-year foundation programme, followed by 2–3 years' participation in a basic specialist training programme, with eight or so programmes being on offer.

- (i) The 2-year foundation programme will include the current pre-registration year. During the first year, doctors will acquire generic clinical skills and meet 'learning outcomes' required for full registration at the end of the year. The second year will 'imbue' trainees with basic practical skills and competencies. Indeed, the purpose of the 2-year foundation programme is to impart generic skills through a competency-based, acute-care focus. At the conclusion of the programme, trainees will be assessed.
- (ii) The basic specialist training programmes – provisionally in the subject areas of medicine in general, surgery in general, general practice, child health, mental health, obstetrics and gynaecology, pathology in general and anaesthetics – will provide a breadth of education and training. Again, progress of trainees will be determined by assessment, part of which may be an examination. Finally, the trainees will enter higher specialist training. However, some specialties (for example, paediatrics, pathology and neurology) are considering a 'run-through' process or variable training pathway whereby basic and higher specialist training will not be so distinctly separated.

*Timetable* Postgraduate deaneries are responsible for introducing the reforms according to a tight timetable. The configuration of two-year Foundation programme appointments in trusts must be fully in place by August 2005. August is the month when pre-registration doctors have traditionally joined the NHS and, over the next few years, the numbers of new entrants in England will rise steeply as graduates emerge from recently established medical schools.

*Pilot schemes.* During 2003, across the regions Modernising Medical Careers pilot schemes were set up. (These pilots are not to be confused with pilots set up for the EWTD under the auspices of the NHS Modernisation programme, although there are overlaps in their content.) Since 'competency' and assessment are the core principles of Modernising Medical Careers, the pilots have focused on improved ways of delivering training, rather than re-structuring the clinical workloads of doctors. Competency is a set of skills, knowledge and behaviours that are fit for the purpose (Halligan, 2003; see below). By September 2003, soon after Modernising Medical Careers was launched in England, 37 pilots were underway; by December, the number was over 150.

*Rolling out Modernising Medical Careers* The Northern Deanery was in the forefront of developments nationally. After setting up a first wave of pilots in trusts across the region to appraise new documentation, in Autumn 2003 trusts were invited to bid for project moneys. Certain constraints operated: each project should take about a year to enable the findings to be taken up in the Deanery's Modernising Medical Careers strategy, and the project money could not be used to fund posts as it was 1-year and non-recurrent. By November, 17 pilots were identified. The topics ranged from exploring opportunities in mental-health services for implementing psychiatry as part of the foundation programme (training in psychiatry is currently undertaken by very few PRHOs), through strategies for improving learning opportunities and assessment, to the dynamics of the 'hospital at night' in large and small hospitals. In all, more than £1 million was invested on Modernising Medical Careers projects. The Deanery was committed to appointing junior doctors to 120 Foundation Programmes (2 years) with the doctors starting work in August 2004. Training opportunities being introduced for doctors in their second year (F2) included general practice, psychiatry, laboratory medicine and palliative care (The Northern Deanery; [www.ncl.ac.uk/pimd](http://www.ncl.ac.uk/pimd)).

*The colleges' role* Apart from supporting the innovative pilots, the colleges' particular role will be to review the appropriateness of the existing phasing and standards of examinations leading to their qualifications, since the examinations act as benchmarks for progressing through basic and higher specialist training (Table 4.2). It is easier now to appreciate why the published guidance for some colleges was under revision in 2003 – for example, for basic training in general surgery and ophthalmology. The higher training committees for medicine and surgery were exploring alternative models for integrated training programmes in their specialties, while taking account of the statutory training-period requirements for the respective specialties (as shown in Table 4.1).

*Quality assurance* A quality-assurance and assessment framework will be governed by the PMETB based on nationally agreed principles. (Two statutory committees of the PMETB cover quality assurance, and assessment and training.)

*Resource consequences* From the DH's perspective, as of September 2003, there were no financial barriers to Modernising Medical Careers, nor numerical or technical barriers (Halligan, 2003). That said, by introducing an additional early year (F2) of training when doctors spend shorter periods in different clinical services than they do currently in the first year of SHO training, extra demands for staffing the services will be experienced. So, early in 2004, the ceiling on SHO posts was effectively lifted and trusts were encouraged to re-map funding of trust doctor posts to SHO posts (see Section 5).

Significant additional 'opportunity' costs will be borne by the trusts when introducing Modernising Medical Careers, as highlighted in a scoping study conducted in the Southern Derbyshire Acute Trust in 2003. The trust covers a large district hospital with 1050 beds, 200 consultants and over 230 doctors in training, including 36 PRHOs. Almost 50 consultants had specific educational roles (for example, college tutor, educational supervisor). The average amount of time dedicated to education by these consultants was calculated as 576 hours per month (based on a 42-week year). With the exception of four consultants, none had protected time nor received sessional payments for carrying out their roles (Straw and Hewlett Davies, 2003). From 2006, when the F2 II is introduced, the demands for appraisal and assessment will escalate in all hospital trusts as they will have twice as many PRHO-equivalent doctors and new training responsibilities for SHOs that will involve additional consultant supervision and other clinical staff.

## **4.7 Higher specialist training curricula**

### **4.7.1 The original curricula**

During 1995 and 1996 the higher training committees, on which are representatives of many specialist societies and associations, prepared curricula for specialist training to meet new regulations on European specialist medical qualifications. The curricula had to be approved by the newly established STA in terms of content and clinical skills attainment by SpRs. The curricula had to take account of the statutory minimum training periods for individual specialties and training in sub-specialty interests. The task of drawing up outline curricula for sub-specialty training was delegated in many specialties to panels representing sub-specialty interests. In general surgery, for example, seven sub-specialties are recognised, each with a national professional body, and these bodies advised on the content and levels of sub-specialty experience within the general surgery curriculum.

Opinion differed among curricula developers as to whether or not explicit guidance should be incorporated into the curricula on minimum volumes of

procedures for trainees to undertake. The curricula for sub-specialist training in cardiology, and gastroenterology and hepatology, contained detailed minimum targets of procedures (Hall *et al.*, 1995; Joint Training Committee's Advisory Group on Gastrointestinal Endoscopy, 1996). Likewise, in surgery, some sub-specialties identified minimum numbers of cases to be operated on (endocrinology), some required hospital units providing sub-specialty training to meet certain minimum workload levels (breast surgery) and some stipulated both requirements (vascular surgery; Joint Committee on Higher Surgical Training, 1996).

The curricula (or syllabi) were, in general, relatively proscriptive and tailored to a system of record-in-training assessment (RITA) that had been formalised in the DH's guide to SpR training (Department of Health, 1996). Each trainee underwent an annual RITA review by a panel under the aegis of the deanery specialty training committee. As evidence of satisfactory progress, trainees submitted log books, case books, reports from supervisors, examination certificates and so forth.

A prospective evaluation by the Open University of the higher training reforms observed that over the years 1996–1997 standards of assessment had definitely risen, but not all the scales being used for assessment purposes were suitable for determining whether an SpR was independently competent or not. The scales generally needed to be clarified and simplified and clear descriptions of the assessment strategies were needed from colleges. The researchers surveyed SpRs in their final year of higher training to assess their readiness to take consultant responsibility. The surveys for 1998 and 1999 recorded a decline in the confidence levels of general surgical SpRs in providing clinical care (for example, over handling emergencies and performing procedures; Open University, 2001).

#### **4.7.2 Competency-based curricula**

The Joint Committee on Higher Surgical Training was aware already of weaknesses in the monitoring system, especially the responsibility borne by trainers who were expected to assess critically the capabilities of junior colleagues without being provided with requisite tools (for example, checklists). The Committee therefore set up a Competence Working Party that met between 1997 and 2001 (Rowley *et al.*, 2002). Although the Working Party never reached a consensus on a definition of 'competency' as applied to surgical training, even after consulting the body of literature in medical education and other disciplines, it radically influenced the work of the specialist advisory committees (SACs) for the surgical sub-specialties. The surgical curricula should now be divided into phases of training, and both trainees and trainers needed to know what was required at the end of each stage. The level of knowledge and skill at the end of each phase had to be defined, although each SAC, with the approval of the Joint Committee on Higher Surgical Training, could determine which methods of assessment they preferred to use. Finally, the frequency, stage and timing of

each assessment would be mapped. (This curriculum project has continued on an intercollegiate nationwide basis and piloting of the implementation phase is scheduled.)

The surgical SACs were not the only ones engaged in revising their curricula; the medical SACs covered were likewise engaged, with the encouragement, or under the direction of, the STA, which had to approve the curricula (Specialist Training Authority, 2001). Other colleges engaged actively in developing revised competence-based higher training curricula during 2001–2002 included the Royal College of Anaesthetists (the first to be approved), the Royal College of Ophthalmologists, the Royal College of Psychiatrists and the Faculty of Accident and Emergency Medicine, and by 2003–2004 the remaining colleges were equally pre-occupied. The anaesthetics programme, for instance, places considerable emphasis on testing attitudes and behaviour.

The revised higher training curricula were approved and published in 2002 and 2003 and they are covered in the document survey (see Appendix 5). In contrast with the original curricula drafted in 1995–1996, the new curricula are lengthy documents, often 50–60 pages, with detailed tables identifying expertise needed for treating or managing many types of clinical conditions or diseases. They are available on the college's websites (the anaesthesia curricula are available on a CD-ROM).

#### ***4.8 Higher training guidance and implications for access***

The project's survey of college guidance covered 22 specialties in which a CCST is awarded (see Table 4.1) and the higher training curricula and accompanying guidance were examined for recommendations with volume and concentration implications. The review, described in Appendix 5, also covered the sub-specialty curricula (of which there were five) and special skills curricula (six) in obstetrics and gynaecology and sub-specialty curricula (10) in paediatrics. Table 4.4 identifies the specialties that made recommendations of this kind: the instruction to see Appendix 5 in Table 4.4 indicates that a curriculum identified numbers of specific procedures to be performed or patients treated. The recommendations were of two kinds: criteria for recognising units for higher training and minimum caseloads for trainees to accomplish.

- (i) *Recognition of hospital units* The curricula for 10 specialties and nine sub-specialties or special skills made recommendations applying to either annual throughput or consultant staffing levels. Staffing was the primary concern of the surgical specialties. The only guidance with detailed threshold caseload levels was for sub-specialty training in neonatology, which limited numbers of SpRs in the paediatrics higher training programmes undertake. The criteria covered minimum numbers of intensive-care cots and neonates of very low birth weight or requiring ventilation.

- (ii) *Minimum caseloads for trainees* Only six of the 44 curricula examined comprehensively specified numbers of procedures or cases (as indicated by the instruction to see Appendix 5 in Table 4.4). They were in anaesthetics (applying to trainees' advanced sub-specialty training), ophthalmology (both surgical and medical) and the paediatrics sub-specialties of gastroenterology (with respect to endoscopy experience) and rheumatology. Three other curricula outlined minimum volumes: cardiology, respiratory medicine and urodynamics in gynaecology.

**Table 4.4 Higher training recommendations with volume implications by specialty**

<b>Specialty – higher training</b>	<b>(i) Recognition of units for training</b>		<b>(ii) Trainees' minimum experience (i.e. procedures performed)</b>
	<b>Population served or minimum annual throughput</b>	<b>Consultant staffing level or ratio to trainee</b>	
A&E Medicine	25 000 total new patients and open 24 hours Paediatric A&E medicine: 18 000 new child patients	At least two consultants	
Anaesthetics	Obstetrics anaesthesia: units with sufficient complexity (e.g. 2000 or more deliveries)		Anaesthesia caseloads for advanced training in cardiac/thoracic, neuro, obstetrics, paediatrics (see Appendix 5)
General internal medicine	Ten inpatients per SpR (care of elderly, emergency care for 30 patients/month)	Two consultants with annual volume of 125 procedures	
Cardiology	For interventional training: 400 PCI procedures		200 interventions over 2 years, 125 as first operators
Renal medicine		Training centres: three consultants each, five renal sessions weekly DGHs: two consultants each, five renal sessions weekly	
Respiratory medicine	200 bronchoscopies		Ten pleural biopsies; 20 intercostal tube placements; setting up 50 CPAP and NIPPV; 30 tuberculin tests; 30 tests for common allergies
Surgery (all specialties)		One whole-time equivalent (wte) consultant: 1:1.2 middle-grade staff. Within this ratio individual SACs may have separate ratios	

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General surgery	Consultant wte: middle-grade ratio not to exceed 1:1.2		
Trauma and orthopaedics	Trauma services to have four consultants		
Urology	Two consultant urologists		
Ophthalmology	Three consultants for first- and second-year training, and four with special interests for senior training		Detailed caseloads according to sub-specialty (e.g. 300 cataract cases; see Appendix 5)
Medical ophthalmology			Quotas of procedures (e.g. 30 cases of laser therapy for macular disease; see Appendix 5)
Obstetrics and gynaecology Sub-specialties (3)	Maternal and fetal: 3500 births per year and referred 40 fetal abnormalities Urogynaecology: 500 new patients Gynaecological oncology: 150 new cases		Gynaecological oncology: caseloads over 2 years (see Appendix 5)
Obstetrics and gynaecology Special skills (3)	Assisted reproduction: 500 new couples; 250 fresh IVF cycles Obstetric leadership: 3000 women		Urodynamics: overall management of 30 patients
Paediatrics Sub-specialties (6)	Neonatal: workload volumes for intensive care (see Appendix 5) Allergy, etc.: 30 admissions and 100 immunocompromised patients Diabetes: 2 million population Neurology: 1 million population served	Neonatal: two 'neonatal' consultants Allergy, etc.: two FTE specialist consultants Neurology: two paediatric neurologists	Endoscopy: procedures/minimum competency (see Appendix 5) Rheumatology: patients over 2 years (see Appendix 5)

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*CPAP, continuous positive airway pressure; FTE, full-time equivalent; NIPPV, non-invasive positive pressure ventilation; PCI, percutaneous coronary intervention.*

*Note: The instruction to see Appendix 5 indicates that a curriculum identified numbers of specific procedures to be performed or patients treated and details of the curriculum appear in Appendix 5, covering the survey of documents.*

*Sources are given in Section 4.12.3.*

## **4.9 Inter-specialty perspectives on curricular developments**

From the fieldwork interviews and from other college documents, an overview was gained of policies followed by the higher training committees or their SACs with respect to curricula developments (see Box 4.1). Certain themes emerged.

- (i) The findings from the project's document survey were consistent with the reported policies followed by the college bodies.
- (ii) Two major specialties specified minimum thresholds of caseloads. Anaesthesia curricula, while detailing the experience to be achieved in the special fields of anaesthesia (for example, neuroanaesthesia and obstetrics), had been strengthened in two main respects: the chain of responsibility for training was now well specified and there was clear delineation of what was required to achieve competence. Targets in the ophthalmology curriculum for surgeons had been revised to take account of changing clinical practice.
- (iii) In medicine, the 2003 curricula for cardiology and gastroenterology, two specialties known as being procedure-oriented, had been substantially modified. As noted in Table 4.4, cardiology merely indicated the overall volume of interventions to be undertaken over a 2-year period, whereas previously there were detailed targets for different types of investigation and procedure (Hall *et al.*, 1995). With gastroenterology, experience had proved to be telling, as can be seen by this statement from the 2003 curriculum.

*The original curriculum published in 1996 by the SAC in Gastroenterology suggested a relatively rigid programme of basic training followed by modules of further training in certain areas. It has proven impossible for training to be delivered in this way for the vast majority and thus the new curriculum is more flexible. The major changes in this revision are in the detail of the subject matter and more importantly the methods of assessment of levels of achievement and competence are defined.*

(Joint Committee on Higher Medical Training, 2003:p. 4).

However, although targets were not specified in the gastroenterology curriculum, over the past few years endoscopy units had been registered and accredited according to caseload volume criteria for providing multi-professional training to physicians, surgeons, radiologists and nurse practitioners (Joint Advisory Group on Gastrointestinal Endoscopy, 2001).

- (iv) The focus of higher training bodies for medicine and psychiatry, whose curricula were published in 2003, had now turned to the mechanisms for assessing competency. In medicine, pilot surveys of SpRs and other hospital staff involved with higher training were carried out to evaluate methods of assessment, whereas in psychiatry the college undertook an exploration of international experience.
- (v) In surgery the propensities of trainee doctors to acquire technical skills differ, so delivering competency-based training could assist surgical departments in capitalising on the operative expertise among their cadres of

trainees. (As Section 3 illustrates, in general surgery and urology, hospital trusts rely heavily upon trainee doctors for staffing the services.) Although empirical research assessing competency-based training in postgraduate medicine is very limited, an evaluation in neurosurgery at Johns Hopkins University, Baltimore, MD, USA, indicated that reductions in time taken to master surgical skills could be achieved with such a programme (Long, 2000).

#### **Box 4.1 Inter-specialty variations in higher training and recent developments**

**A&E** Higher training takes 5 years, during which there are two clinical components: 3 years in A&E departments and secondment for 3 months in five specialties (general paediatrics, general medicine, anaesthesia, trauma and orthopaedics, and general or other relevant surgery). Training programmes are made up of a mix of tertiary and DGH centres. If a district centre has two consultants, an SpR can train with them, although in smaller centres of this kind, 1 year in an SpR's 5-year programme would be most likely. Trainees may undertake their clinical secondments in district hospitals.

**Anaesthetics** The specialty, unlike many others, has had competency-based training since the mid 1990s, with higher training taking 5 years. In basic training, there is a test of competency at 6 months before a trainee can go on call or work under distant supervision, and behaviour and attitude are assessed in the first year of training. The new higher training curricula differ from the previous curricula in two main respects. The chain of responsibility for training is now well specified and there is clear delineation of what is required to achieve competence. The examination structure for the FRCA has also been changed.

**Obstetrics and gynaecology** The college has pursued a policy of competence-based assessment for a number of years. The assessment process is built on a core log book for SpRs in years 1–3 and special skills training modules in years 4 and 5 or, for small numbers of SpRs, sub-specialty training in years 4 and 5. There are six special skills training modules and trainees typically undertake two modules, each taking around 6 months to complete. Modules may be carried out in district hospitals as well as in tertiary centres. Sub-specialty training is available in five subjects in separately approved training centres.

**Ophthalmology** The targets for surgical procedures in the new higher training curricula reflect changing clinical practice. Some types of surgery are less prevalent now than in the past. The major change in the latest revision was the increased number of cataract operations: from 200 to 300. Since cataract operations are a benchmark in ophthalmology, the higher volume would give the public greater confidence in the ability of a surgeon. Moreover, trainees are comfortably exceeding this rate over a 4.5-year training programme.

**Paediatrics:** Five years is the normal period for higher training; 2 years of core training and the remainder either as post-core training leading to general paediatrics or tertiary training in one of 10 sub-specialty areas. Core training consists of 6 months each in neonatal, community, general and a related paediatric area. It is mandatory for 6 months

of general experience to be gained in district hospitals whereas neonatal experience is in units providing level II or level III intensive care. The college has been working on competency-based curricula for sub-specialty experience, and few curricula now specify minimum activity levels; gastroenterology (endoscopy) is an exception in this respect (see Table 4.4).

**Psychiatry:** The revised higher training curricula for the six disciplines recognised for CCST were formalised in June 2003 and one of the big changes was the emphasis placed on competency assessment. In the second half of 2003 the college undertook an exercise to identify how competencies are assessed across the world, how competencies are identified, how people are being trained and what the equivalent is between the British system and systems overseas.

**Medical specialties:** Higher medical training may be undertaken in 25 specialty training programmes. The revised curricula focused on the competencies to be acquired. However, cardiology has retained an explicit requirement for training in interventional cardiology (see Table 4.4) although the target is greatly modified compared with the previous curriculum. Gastroenterology has moved away completely from specifying numbers of procedures. In 2003 the Joint Committee on Higher Medical Training launched a pilot study of new methods of assessment for SpRs, drawing on upon international models and experience for assessing competency-based training.

**Surgical training:** Competency-based curricula are still being developed for all nine surgical specialties. Some people pick up the skills very quickly whereas others do not, yet this does not make them poor surgeons. So, the benefit of the competency concept is that doctors will be encouraged to tailor their clinical practice to their expertise. In future there may be less of an emphasis on working exclusively as a 'super-specialist' (for example, vascular, thyroid, pancreatic, etc.). There may be a realisation that the numbers of super-specialists needed are not so great and some of their general work could be done by competent generalists. Although about 80% of the work is not complicated, 50% of general inpatient admissions present as emergencies and many surgeons are now dealing with emergencies that are unrelated to their elective work. Training in general surgery may need to incorporate experience in a surgical specialty.

#### ***4.10 Hospital services to which the training curricula apply***

Since the 1996 review of training curricula substantial changes have occurred in the delivery of clinical services covered by the acute specialties. The changes are attributable to a number of factors: epidemiological, behavioural, technological, clinical, organisational and financial (for example, investment in additional manpower and facilities).

A significant organisational change benefiting the welfare of trainees and patients has occurred in surgical operative practice (affecting both surgeons and anaesthetists) brought about by improvements in theatre facilities. Comparative surveys in 1995/1996 and 2002 of out-of-hours operating showed that 70% of emergency procedures are now performed as emergency cases between 08.00 and midnight compared with 37% previously because of the increased availability

of theatre sessions scheduled for emergency cases. (The proportions of all cases that were emergencies were 8% in both years.) In addition, in 2002 consultants were more likely to be present during weekday operations (66% for surgeons and 62% for anaesthetists; National Confidential Enquiry into Perioperative Deaths, 1997, 2003).

Key changes in the demand for, and delivery of, clinical services are identified in Box 4.2 and it can be seen how specialties inter-relate and impact on one another, and how the over-riding influences may be societal. The national birth rate and the inter-relationship between obstetrics and neonatology and their impact on training provide a useful illustration.

**Box 4.2 Patterns of change in the delivery of hospital clinical services**

**A&E** A substantial increase is anticipated in the numbers of emergency visits to A&E departments as GPs opt out of evening and weekend work under the new contracts. In some ambulance regions there has been a 10% increase in 999 calls, while elsewhere, in minor injuries units, there have been increases of up to 15% in attendances.

**Anaesthetics** Anaesthetists are involved in the care of two-thirds of all patients admitted to hospital these days. With medical emergency admissions, it is an area where they work together with A&E medicine and physicians. Part of the reason for this expansion in their clinical areas is the progress made over the past years in the safety of anaesthesia. Nowadays there are very few people who cannot safely be anaesthetised with the right equipment and properly trained staff.

**Obstetrics and gynaecology** There have been instances of consultant obstetric units closing or re-configuring and free-standing midwifery units are now more frequent. This has happened in urban areas where perhaps two or three closely adjacent hospitals have come on to one site. With 'abnormal' deliveries being concentrated more on one site, it actually helps training. Trainees can also visit community units to observe how care is provided. With gynaecology, increased reliance on medical methods of treatment for menorrhagia has meant a substantial reduction in the number of hysterectomies.

**Paediatrics** Demographic changes have had an impact: the birth rate is going down: units that used to get over 2500 babies a year are now down to 1500 a year. For neonatal services there needs to be a critical mass. Children are also much healthier now than they were. Levels of infectious disease are low. But for children who are seriously ill a lot more can be done for them than in the past. Another change relates to access to primary care – getting surgery appointments and problems with GPs being available at night. NHS Direct is also directing children and babies to hospital. A lot more minor illness is coming to hospital. So, paradoxically, while children are much healthier, hospitals are seeing more minor illness.

**Medical specialties** Over the decade there have been examples of mergers of services (such as cardiology and gastroenterology) involving acute hospitals in close proximity. It has not caused a complete service to close in an individual hospital; rather, special functions have been retained on individual sites (for example, a catheter laboratory on one site with medical admissions beds on another). This means that trainees travel between sites for their clinical experience. Other services have evolved; for instance, care of the elderly. Now there are no problems in staffing care of the elderly services because the trainee posts are incorporated in medical rotations. The next clinical area for expansion is emergency medicine.

**Surgical specialties** Networking between hospital units is gradually taking off. It is happening with trauma services, vascular surgery and, in particular, in cancer services since the introduction of the National Service Framework for Cancer. Thus there is not a formal merger between trusts, but a whole block of work is no longer delivered in one trust. Another movement is the establishment of day treatment centres. It is still too soon to assess their impact, but there is no reason to expect opportunities for training to be affected. Another movement, led more by consultant anaesthetists than consultant surgeons, has been for surgical operations in children under 3 years to be concentrated in bigger centres where there is a critical mass of expertise. This policy has impacted on the surgical workloads in district hospitals.

**Ophthalmology** A major change has been in the way that the services are now provided. Surgery has become very largely day case surgery. The specialty has also benefited greatly from the expansion in consultant numbers over the last 10–15 years, with some new clinical services introduced. For years, ophthalmic services have run on a hub-and-spoke model with consultants from bigger centres (including DGHs) providing clinical services in smaller units.

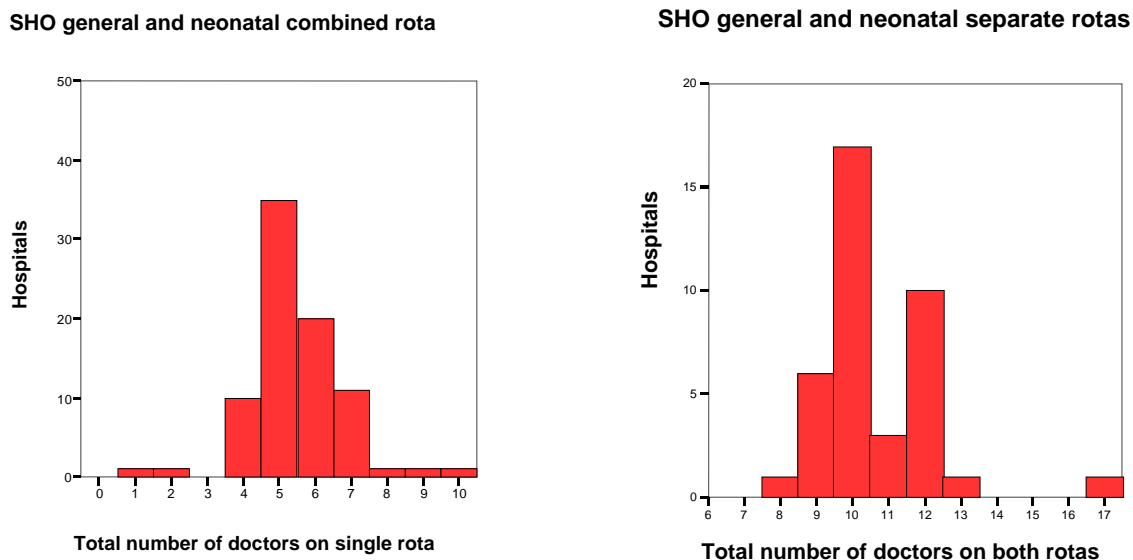
**Psychiatry** Acute services have moved beyond the acute units, with the emphasis on home treatment, crisis-resolution teams, assertive outreach teams and so forth. It means that a person who is on call and is hospital-based may have to travel to acute situations some miles away in the community. Over the last 2 years, as the big mental-health trusts have come into place, very little change has occurred. But it is predicted they will have an impact in the next 3–5 years; changes will start occurring in terms of training and funding of training.

In some district hospitals, junior medical staff providing out-of-hours cover are organised on 'dual' rotas; that is, separate rotas for neonatal care, and care of paediatric inpatients and emergency attenders. The reason for this is often that the neonatal unit is adjacent to the obstetric unit in another part of the hospital and there is a desire to minimise the risk of junior medical staff being faced with conflicting urgent demands in separate locations (refer to the discussion of the project's case studies in Section 3). Hospitals with integrated paediatric and neonatal accommodation may also have dual rotas, especially if the neonatal unit provides an advanced level of intensive care. This project was given access to the census of paediatric hospital departments undertaken by the Royal College of Paediatrics and Child Health in 2001 (see Section 5) and we estimated the proportion of non-teaching departments in England with dual rota arrangements.

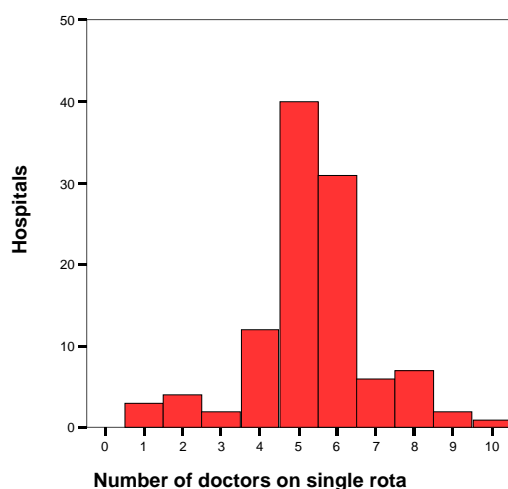
Comprehensive data were available for 121 non-teaching hospitals. Figure 4.1 indicates that separate rotas for general and neonatal care were organised for SHO doctors in 32% (39) of the hospitals and for middle grades in 9% (11 hospitals). (The College guidance on neonatal core training for SpRs considers that it is desirable for training to be undertaken in neonatal units working towards establishing separate middle-grade and consultant rotas; Royal College of Paediatrics and Child Health, 2003a.)

Continuing with this illustration, we can begin to understand the conflicting issues facing trust managements, especially those managing hospitals with dual SHO paediatric and neonatal rotas. Whereas the current neonatology training curricula for career SHOs and higher generalist training do not contain explicit recommendations on the volumes of clinical cases for training purposes, trainees personally may prefer working in hospitals with busy departments offering a breadth of experience. Yet for obstetrics and neonatal care the supply of patients is determined primarily by the fertility rates of local catchment populations and nationally the rates are in decline (Office of National Statistics, 2004). The situation, from the training perspective, may be exacerbated when the Modernising Medical Careers programmes are rolled out in 2005–2006 and additional trainees require exposure to the available clinical caseloads. In the meantime, however, there may be a re-aligning of medical staffing patterns in response to other national policies, especially the EWTD, and these pressures are discussed in the following sections.

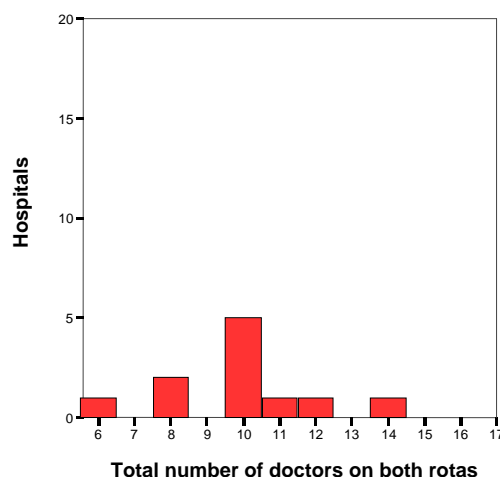
**Figure 4.1 Paediatric non-teaching hospital units in England in 2001: general paediatric and neonatal rota arrangements for middle- and SHO-grade doctors**



**Middle-grade general and neonatal combined rota**



**Middle-grade general and neonatal separate rotas**



## **4.11 Summary**

For this section on analysing the ways in which training curricula for hospital doctors have evolved over the past decade, the primary sources were documents on postgraduate training curricula and guidance and examination regulations issued by the medical Royal Colleges, Joint Higher Training Committees and specialist societies. Basic and higher specialist training curricula for 22 specialties were surveyed to assess whether they contained indicative guidance on clinical workloads, since guidance of this kind could influence the deployment of training doctors in smaller DGHs. The survey replicated an earlier survey done in 1996 for the DH. The documents were identified and downloaded from the Internet websites for the colleges, committees and societies. Interviews were later held with representatives of these bodies, who both checked the comprehensiveness of our searches and discussed the curricula and broader implications of current DH policies for raising standards for basic training and widening opportunities for higher training outside teaching centres.

The document survey and interviews revealed that, since 2000, higher training curricula for all specialties had been substantially revised. They focused on acquiring competencies and there were far fewer references to indicative caseloads than previously. The training bodies were now addressing the question of how best to assess the progress made by trainees within the competency frameworks. During 2003, the DH eased the controls over the allocation of national training numbers for higher training in hospital specialties and targeted the higher training expansion at WDCs that were not in close proximity to teaching centres (see Section 6). The guidance on clinical competencies within the higher training curricula would not preclude the establishment of additional SpR slots in smaller district hospitals, especially as the slots would be

incorporated into regional training programmes and trainees would rotate between teaching and non-teaching units.

Modernising Medical Careers was the other major DH policy initiative that the colleges were grappling with. The basic specialist training curricula were being reviewed to determine how best to facilitate an additional year prior to entering higher specialist training. However, as the new training programmes would not be introduced until August 2005, the likely impact of this policy could not be judged satisfactorily, especially when, in August 2004, trusts had to meet the EWTD regulations over trainees' work patterns.

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## Section 5 The New Deal and the EWTD

In the previous section we outlined the fundamental changes taking place in postgraduate medical education and training. While many of these changes are yet to be implemented, the implications for access look promising. In contrast to the 1996 review, the new arrangements appear to be relaxing the constraints, leading to a greater concentration of services. However, the commentators and some individuals who we interviewed are concerned that staffing requirements to meet the restriction on hours worked by junior doctors may lead to greater concentration of services.

While the focus currently in the NHS is on the EWTD, trusts have been reducing the hours worked by junior doctors for the last decade in order to meet the targets set by the DH under the New Deal. In this section we summarise the changes associated with the New Deal and the EWTD. We consider how trusts and those responsible for PGME have responded to the challenge of changing working patterns to become compliant with new working-time regulations.

### **5.1 The New Deal: first phase 1991–1996**

Workload surveys conducted in the mid-1980s showed that doctors in busy specialties, who were on duty for 6 or 7 days during the week, were typically working for 60–70 hours (Dowie, 1990). A ministerial working party on junior doctors' hours was established in 1990 and new working arrangements for doctors and dentists in training were issued: the New Deal (NHS Management Executive, 1991). The first phase of the New Deal programme (until December 1996) focused particularly on *contracted hours of duty* and target dates were identified for employing authorities to reduce the maximum average number until January 1997, when no doctor in training should have been contracted for more than 72 hours of duty weekly, except for SpRs whose training would benefit from additional clinical experience. Regional task forces were set up to facilitate the reorganisation of doctors' working patterns in NHS trusts.

The first stage of the implementation of the New Deal ended on 1 April 1993, when the maximum average contracted hours of duty for doctors in training was not to exceed:

- 83 hours per week for doctors working on on-call rotas;
- 72 hours per week for doctors working on partial shifts;
- 60 hours per week for doctors working on full shifts.

Progress was slow: at the end of August 1992 only 6.4% of training posts in the English regions were in shift systems, and three-quarters of these were in A&E medicine. A year later, the estimated number of hard-pressed posts with contracts of between 72 and 83 hours weekly was over 10 000, or about

one third of all posts in England (Dowie, 1993). To maintain progress, the Government allocated funding for 125 consultant posts in addition to 350 consultant posts and 150 staff-grade posts for which funding was already identified. The DH also proposed that the ceiling for the total number of doctors in the staff grade be raised from 10 to 12.5% of the number of consultants.

The next target, set for 31 December 1994, was a reduction of the average contracted hours of duty per week to a maximum of:

- 72 hours for doctors on on-call rotas in hard-pressed training posts;
- 64 hours for doctors working on partial shifts;
- 56 hours for doctors working on full shifts.

In October 1996, 3 months before the final target date, the NHS Executive considered that one-quarter of junior doctors in England had not yet met the requirements of the New Deal.

## **5.2 The New Deal: second phase 1997–2000**

The second phase focused on *actual hours on duty and actual hours worked*, since the problem with contracted hours was, apparently, virtually eliminated. The most numerically significant problems remained at HO and SHO levels in the acute specialties (NHS Executive, 1997). New Deal revised targets were now:

- actual hours of duty, on average, not to exceed contracted hours of duty for all work patterns (on-call rotas, partial shifts and full shifts);
- actual hours of work should not exceed an average of 56 hours a week;
- adequate rest periods were required according to the respective work patterns.

Although monitoring procedures for trusts had previously been introduced, 1997 saw the introduction of a system of accreditation of trusts that met the New Deal criteria in full or had realistic timetables for implementation. No financial incentives were offered.

The task force returns for England for 31 March 1998 showed that 17% of juniors' posts (4999 out of 29 976) did not comply in full with the New Deal hours targets and this represented an improvement of 2.8% over the previous 6 months. The greatest problem applied to actual hours work. Only 27 trusts in England had been fully accredited (Review Body on Doctors' and Dentists' Remuneration, 1999). As a mechanism to address the issue of excess duty hours, the British Medical Association, in its evidence to the Review Body on Doctors' and Dentists' Remuneration late in 1998, proposed that all hours outside the New Deal duty hours limits for the contracted working pattern should be paid at double the current rates (Review Body on Doctors' and Dentists' Remuneration, 1999), a proposal that was not taken up by the Government until a few years later.

### **5.3 The New Deal: third phase 2000–2004**

Progress towards meeting the New Deal targets was stimulated in 2000 by the following key events.

- The introduction in the NHS of new contractual arrangements for junior doctors (from 1 December 2000) that replaced the additional duty hours system with a banding system designed to provide (i) the highest rewards to those in the highest-intensity posts, working the most unsocial hours, and (ii) clear financial incentives to NHS employers to secure compliance with the New Deal.
- The finalisation of a timetable for introducing the EWTD for junior doctors in the NHS (on 1 August 2004).
- The establishment of new Regional Action Teams (RATs) to ensure delivery of the revised New Deal targets and with authority to monitor local work patterns and penalise non-compliance, particularly with respect to HO posts.

In addition, the DH put in place two contractual obligations:

- all PRHOs to be New Deal-compliant from August 2001;
- all other junior doctors to be New Deal-compliant from August 2003 (the minimum compliance rate by April 2002 being 62%).

According to the DH, the immediate impact of the new contract, with its financial incentive to report non-compliance with hours and rest requirements, was to expose the true levels of New Deal non-compliance across the NHS. In March 2001 only 56% of junior doctors were in compliant posts with wide variations across trusts and regions (Department of Health, 2001a).

Six-monthly monitoring rounds were introduced nationally whereby doctors in training posts recorded their hours of duty and worked hours over 1 week. The national monitoring round in March 2003 revealed that:

- 79% of all junior doctors were fully compliant;
- 89% of all juniors worked less than 56 hours a week;
- 26% of trusts reported that all junior doctors were in compliant posts (Department of Health, 2003a).

Six months earlier, the London regional action team observed that across London 71% of posts (5189 out of 7271) were compliant in accordance with the New Deal (London Regional Action Team, 2002). The monitoring rounds continued, the most recent being on 31 March 2004, with (strategic) health authorities being responsible for overseeing the collection of workbooks from all employers of junior doctors (Department of Health, 2004).

## **5.4 New Deal incentives generated by the 2000 doctors' contract**

Under the restructured contractual arrangements for remunerating out-of-hours duties, a pay banding system was introduced, the bands representing the degree of work intensity of individual posts. Posts could be re-banded as conditions improved. Six banding levels apply to full-time employees:

- Band 3 includes all juniors whose posts are non-compliant with the hours limits or rest limits recognised by the New Deal;
- Band 2 (split into Bands 2a and 2b) includes all juniors whose posts are compliant with the New Deal and who work between 49 and 56 hours of actual work, the division into 2a and 2b applying to the degree of unsociability of the hours (night-time and weekends);
- Band 1 (split into Bands 1a, 1b and 1c) includes all juniors whose posts are compliant with the New Deal and work up to and including 48 hours, the division into 1a and 1b applying to unsociability, and 1c applying to low frequency of being on call.

Thus, from 1 December 2000, the total salary of junior doctors comprised a base salary to which a band supplement was added. The supplements were calculated as a proportion of the base salary (Department of Health, 2001b).

When determining the proportions (multipliers) for the band supplements, the Government wanted on the one hand to incentivise NHS trusts into action over non-compliant posts by adopting a punitive multiplier for Band 3, while recognising on the other hand that for trusts with numerous non-compliant posts a punitive multiplier could be particularly costly in the short term. So the multipliers were set on a sliding scale: for example:

- Band 3        1.62 (from 1/12/00), 1.7 (1/12/01) and 2.0 (1/12/02);
- Band 2a      1.5 (from 1/12/00), 1.6 (1/12/01) and 1.8 (1/12/02)  
(Department of Health, 2001b)

Thus the band supplement multipliers operating in 2003/2004 were 1.2 (Band 1c), 1.4 (Band 1b), 1.5 (Band 1a), 1.5 (Band 2b), 1.8 (Band 2a) and 2.0 (Band 3; Department of Health, 2003b).

The generosity of the supplement multipliers had an adverse impact that was, perhaps, unforeseen. From the employers' perspective, implementing improvements to working patterns proved difficult as a result of widespread lack of cooperation by junior doctors in their contractual obligation to monitor their working patterns and co-operate to improve compliance. Moreover, because of the rotational nature of many posts, it was often difficult for employers to either enforce monitoring or take appropriate follow-up measures before trainees moved to another post with another employer (Review Body on Doctors' and Dentists' Remuneration, 2003). By 2002 senior trainees eligible for a band 3 supplement, which doubled their basic salary, were earning more than some consultant colleagues.

Complicated pay-protection arrangements were set in place for doctors on rotational programmes whose future posts were likely to be re-banded to a lower level of supplement, particularly when a transition occurred from band 3 (non-compliant) to band 2A (British Medical Association, 2004). However, by 2003, the great majority of doctors were in compliant posts and pay protection was no longer such a burden for employers.

Calculating the correct band for each doctor became a complex activity, especially as the working patterns for specialties within hospitals were evolving as shift systems were being introduced. A detailed flow chart for establishing the correct band, published by the British Medical Association (2003), incorporated 15 scenarios. The banding system will continue after August 2004.

## **5.5 Staff recruitment for New Deal requirements**

Between 1989 and 2003 the numbers of SHO posts in England were strictly controlled, so that towards the end of this period there was a 'spectacular' increase in non-standard grade posts (for example, trust doctor posts), created by trusts as they struggled to meet the requirements of the New Deal (Burr, 2003). Middle-grade non-standard posts were also created. There was no mechanism for monitoring the growth in these posts, nor the eligibility or quality of training offered to the post-holders. The DH did not identify the posts separately in the annual 30 September hospital medical staffing censuses. Only ad hoc surveys assessed their relative importance. A survey of trusts in Yorkshire in 2002 found that trust doctors formed 5% of the junior doctor workforce at the time and the trusts had plans that would increase the number to 12% by 2003 (Cooper, 2002; Burr, 2003). Some months later, 21% of the non-consultant advertisements placed in the *British Medical Journal's* careers section were for non-standard grade appointments, some of which were research appointments (Dosani *et al.*, 2003).

## **5.6 EWTD: what will be required, and by when?**

Implementation of the EWTD by August 2004 will impose more stringent requirements on junior doctors' patterns of work.

### **5.6.1 Working hours per week from August 2004**

- The 56-hour working week, as stipulated under New Deal, will continue to be obligatory.
- A phased reduction in maximum hours to 48 hours by 2009 – according to the directive – although the date could possibly be extended to 2012.

### **5.6.2 Rest provisions from August 2004**

For junior doctors from August 2004,

- 11 hours minimum rest between duty periods;

- one rest of 24 hours in each 7-day period, two rests of 24 hours in each 14-day period, or one rest of 48 hours in each 14-day period;
- during duty periods, at least a 20-minute continuous break during shifts of 6 hours or longer.

So, while the general thrust of the New Deal was to reduce the contracted time and time spent working by junior doctors to a maximum of 56 hours, the EWTD was concerned additionally about both the quantity and quality of hours work and time spent resting. Indeed, a ruling in the European Court of Justice (the SiMAP ruling) confirmed that a doctor who sleeps on hospital premises during an on-call period is deemed to be available for work and the time spent resting will be classed as work time and part of the 56-hour week.

The magnitude of the impact of the EWTD is better appreciated by comparing Tables 5.1 and 5.2. The first table summarises arrangements for organising work patterns under the New Deal. It shows that doctors could be *on duty* for 72 hours weekly if the out-of-hours cover was organised as an on-call rota, or for 64 hours if the cover was a partial shift, although under both systems they could only work for 56 hours. The hours in excess of 56 could be spent resting on hospital premises. Table 5.2, in contrast, shows that under the EWTD a doctor who is resident in hospital while on duty can only be available on duty for a maximum of 58 hours and work for 56 hours. In specialties that are not hard-pressed out of hours, it is feasible to staff the service by junior doctors who are on call from home and their maximum duty hours can reach 72 in a week. So, in the run-up to August 2004, trusts looked critically at working patterns across the specialties to establish whether it really is necessary for doctors to be resident. Where the intensity of evening or weekend work in a department has traditionally required resident cover, the alternatives have included moving to full shifts or partial shifts.

**Table 5.1 New Deal limits on contracted hours, worked hours and time off, 2003**

Pattern of work	Maximum duty (contracted) hours	Maximum actual weekly hours	Maximum continuous duty hours	Minimum time off between duties (hours)	Minimum off duty (hours)	Rest
On-call rota	72	56	32 (56 at weekend)	12	48+62 every 21 days	8 h/32, 5 h continuous at night
24-hour partial shift	64	56	24	8	48+62 every 28 days	6 h/24, 4 h continuous at night
Partial shift	64	56	16	8	48+62 every 28 days	1/4 of OOH period
Full shift	56	56	14	8	48+62 every 28 days	Natural breaks

*OOH, out-of-hours; defined as all time outside 8 am–7 pm, Monday–Friday.*

**Table 5.2 EWTD limits on contracted hours, worked hours and time off, 2004**

Pattern of work	Maximum duty (contracted)/actual work (hours), Aug 2004	Maximum continuous duty hours	Minimum period of duty between duty periods (hours)	Minimum continuous periods off duty	Rest
All types of resident work pattern	58/56	13	11	24 h/7 days or 48 h/14 days	11 h continuous in each 24 h and New Deal requirements
Non-resident on call	72/56	13	11	24 h/7 days or 48 h/14 days	

*Source for Tables 5.1 and 5.2: British Medical Association (2003).*

## **5.7 Implementing EWTD while retaining access to services**

Implementing the EWTD is presenting a considerable challenge affecting working patterns, training issues and provision of out-of-hours emergency cover while retaining existing levels of service delivery and access. The DH has stated that

*Crucially, the need to make changes to service delivery to support compliance with the EWTD must not be seen as a reason for failing to deliver against service targets or reducing access to high quality healthcare services. An approach of closing local services in order to meet the EWTD will not be acceptable.*

(HSC 2003/001; Department of Health, 2003c)

Recruiting even more doctors to bring existing rotas into line may not be an efficient use of financial or human resources for various reasons.

- Junior doctors are entitled to 11 hours continuous rest in every 24-hour period. So, if doctors are expected to be resident when on call, a minimum of eight doctors will be needed to run a resident rota and provide cover for colleagues' absences. This may be difficult to attain for all relevant departments in many DGHs.
- For many existing on-call rotas, the intensity of calls is not sufficient to move to a full-shift pattern. It may be possible to provide non-resident on-call cover without increasing the number of doctors.
- It is unlikely that it will be possible to recruit sufficient doctors at SHO level to make all SHO rotas compliant. Small hospitals in rural areas are particularly at risk.

Trusts have been advised, therefore, to:

- assess the activities that doctors in training need to undertake for training purposes;
- appraise different service models to see if there are alternative ways of delivering their services to maintain or improve patient care and still achieve EWTD compliance;
- review working patterns for all medical staff; consultants, associate specialists, staff grades and training grades. The traditional pattern of medical and surgical teams consisting of a consultant working routinely with the same SpR, SHO and HO has already been greatly modified.

## **5.8 What are the solutions?**

In guidance issued jointly by the Department of Health (2003d) and the Academy of Medical Royal Colleges (2003) a range of initiatives was presented.

- A reduction in the number of rotas: fewer but more intensive rotas, supported by on-call cover from home. This might involve some sort of cross cover between related specialties (some trusts are developing models of central emergency teams or night teams able to provide cover across the hospital).
- Effective use of non-medical practitioners will accelerate the movement towards multi-disciplinary team working.
- New non-medical roles are being developed to work alongside SHOs and PRHOs, and may even eliminate the need for these tiers of cover, although experience of providing out-of-hours care will still be needed by trainees for

educational purposes. Increasingly, however, the main responsibility for out-of-hours cover will be taken over by experienced doctors, such as SpRs, staff doctors, associate specialists and, in some cases, consultants.

- Many changes will be achieved by introducing new models of care, such as the separation of high- and low-intensity activities and of day and night services. These will allow medical resources to be concentrated where they are most needed, and will need to be underpinned by the effective use of clinical networks.

The changes will take advantage of other developments ongoing in the acute sector, such as the expansion of electronic support systems and the introduction of medical assessment units and, in due course, be consolidated as the new, expanded cohorts of SpRs complete their training and enter the consultant workforce.

## **5.9 Implications for the service**

The implementation of EWTD may raise issues that impact on the delivery of both training and services within hospitals.

- Working patterns for junior doctors have already changed recently. Many busy specialties, for example, A&E medicine, obstetrics and gynaecology, and paediatrics, now operate full shifts, especially at SHO level. However, full shifts raise operational issues over continuity of patient care (for example, ensuring adequate hand-over procedures) and protecting training time (teaching sessions and training days).
- Different shift patterns have different rest requirements. For senior trainees, the requirement of 11 hours' rest in any 24-hour period may mean that clinics that they are involved in have to be cancelled. This could have a knock-on effect with respect to the trust's waiting-times targets.
- With mental-health services, closer collaboration is envisaged with social services and specialist teams in the community, such as crisis intervention teams.

Many of the changes needed to move the patterns of working of junior doctors in directions that will secure compliance had been evolving under the New Deal. The EWTD has accelerated these changes. As with most aspects of medical education and hospital staffing, the problems differ by specialty. Box 5.1 summarises key issues for the major specialties.

### **Box 5.1 Perspectives of the hospital specialties on the EWTD**

**A&E** Basic training in A&E has been organised in full shifts for many years. It is not expected that the EWTD will place any additional emphasis on new training.

**Anaesthetics** The problem for anaesthesia is the wide range of care that the specialty provides across a hospital. Training in anaesthesia per se may suffer, especially for doctors on full shifts, because of the plurality of provision across hospitals (for example,

theatres, intensive-care units and obstetrics over 24 hours). The implication here is that doctors are too frequently away from the service setting to be exposed to sufficient clinical experience. The situation is now the converse of 10 years ago when service was dominating training.

**Obstetrics and gynaecology** Maternity services in particular are different, just as paediatric services are different. Cross cover between them is not possible, at least at the registrar level. SHO cover in obstetrics could be done by others. In fact there are now units of this kind for obstetrics. It is expected that full shift work for obstetrics will be inevitable. Thus, it is important to have statements about competencies to be achieved during training so as to monitor the shift arrangement. At present it is uncertain what the EWTD implications will be for training.

**Paediatrics** This specialty had already been experiencing a lot of problems in meeting the targets for the New Deal, and in many cases at huge cost to trusts. Thus the EWTD would push the specialty in the direction it is already going. What became clear during 2003 is that the hospital-at-night concept in medicine and surgery was not applicable to either paediatrics or obstetrics. These two specialties are clearly different. The skills and knowledge for paediatrics are very different, and thus a completely different team or different arrangement will be needed for paediatrics and obstetrics. This may lead to some re-engineering of services. Meanwhile, where shifts are introduced, there has to be care to make sure there is an overlap.

**General medicine** The Royal College of Physicians issued in November 2003 a statement on the concept of an out-of-hours medical team made up of medical and surgical trainees for providing care to both medical and surgical patients. With respect to general professional training in medicine there is no reason to assume that such training should be compromised. The doctors will continue to rotate through posts. The key will be the manner in which training opportunities are organised. The model in A&E medicine is a very good system. SHOs are brought together for 2–3 days of induction sessions and their rotations are mapped out with training events and sessions identified. In summary, therefore, out-of-hours medical teams should not hinder training. But it will require an innovative approach in future. This will mean that consultants may have to be more supportive, flexible and committed to training than in the past.

**Higher medical training** The concern here is particularly over the provision of mid-level cover on a shift system basis, especially when current SpRs are very much against working shifts. To have shifts at a mid-grade level 10 medical SpRs or their equivalent would be needed. The alternative is to introduce the concept of the critical care team which looks after admissions at night that work across the hospital. It means, however, that improvements will be needed in the content of training within a given time frame and a report, *Liberating Learning*, from COPMED (2002), has considered the impact of EWTD on postgraduate medical education and training and provides practical guidelines for learners and trainers.

**Surgery** The Royal Colleges of Surgeons have been working particularly on the concepts of reconfiguration of services in response to the EWTD without limiting access to patients. Thus a lot of discussions have been held over the feasibility of providing cross cover for surgical sub-specialties and the proposed hospital-at-night medical/surgical team. The surgical colleges do not believe, however, that at the level of higher surgical training

cross specialty cover is viable. There has been a noticeable reduction in recent years in the amount of surgery performed at night. So, these days trainees probably do not do huge amounts of work at night and much of it can be deferred to the next day. This applies to both SpRs and to SHOs. Surgery is a very 'on-the-job' discipline. There will need to be a major shift in how training is delivered. Consideration will have to be given to defining the endpoint of training and whether or not all trainees should be expected to reach the same endpoint. There is already a movement in this direction in urology. The SAC for urology, in May 2004, advised applicants for higher training posts that in future the number of urological surgeons required to perform open and complex surgery will be severely limited, based on careful analysis of workload data, and it is extremely likely that many trainees will have, at least initially, to consider a career in core and endoscopic urology. With basic surgical training there may be increasing opportunities for trainees to acquire skills within skills centres that are established within hospitals and which provide multi-disciplinary training (for example, for nurse practitioners as well as junior doctors).

**Higher training in surgery** Moving to a shift system means that in any 7-week period a trainee may only be getting between 3.5 and 5 weeks of training by the time annual leave and study leave are taken into account. This means that a doctor may be compliant in terms of the number of hours worked but not in terms of the exposure to the amount of training that is believed to be necessary. So, for the future, new ways of organising and of staffing surgical services (with consultants, middle-grade doctors and SHOs) may be necessary. An alternative is to have everybody, including trainers, working in shifts and the whole hospital functioning 24 hours a day. This model would, however, have very considerable resource costs. In the meantime it is generally agreed that the training time available should be used as effectively as possible and that it is likely that training in each of the surgical specialties will be different. A more modular type of approach seems likely.

**Ophthalmology** The impact of EWTD on training in this specialty is not expected to be great because, in general terms, there is not a lot of acute out-of-hours ophthalmology. Moreover, the specialty does not envisage introducing shift systems, because it is not a front-line specialty. Rather, except in hospitals with very big departments, it may be possible for ophthalmologists, at either SHO or SpR level, to be non-resident on-call. There is a possibility that where there are small units in close proximity providing 24-hour cover that one of these two units may need to closed between 6 pm and 8 am. However, configurations of this kind are not expected to impact on training.

**Psychiatry** Training skills will have to adapt. There will be a need to look at innovative ways of providing both training and supervision. A lot of things that have been done in an old-fashioned way, for example where SHOs and SpRs had a day of research or private study, will have to give way to something else. It will be necessary to start looking outside the 'black box', as it were.

*Sources: Interviews with College representatives and supplementary documents (memos, internal reports, etc.).*

The emerging new approaches to service delivery include internal reorganisation, such as the hospital at night. Other initiatives include adjacent hospitals pooling resources so that only one site provides 24-hour inpatient care while the other remains open as an outreach or outpatient facility. These arrangements can

maintain patient access as well as training capacity as junior doctors move between sites with consultants.

One important lesson from the New Deal experience is that radical change to the hours worked can have unintended consequences for the medical labour market. Reducing the hours of junior doctors and at the same time maintaining strict quantity controls on training posts has created a market for trust doctors, junior doctors who cannot obtain training posts. The growth of doctors in these posts and in other NCCGs is now recognised as having created problems that need to be addressed (see Department of Health, 2003e). At present, as trusts try to increase staff to meet EWTD requirements, the Government is relaxing its controls on training places.

Discussion about the EWTD has focused on junior doctors and the contractual obligation to be compliant. However, it should be noted that the EWTD also applies to consultants. To date, it has not been enforced.

## **5.10 Summary**

This section on the working patterns of junior hospital doctors has demonstrated how, over the past 15 years, the terms of their employment have become much more favourable. The primary source documentation covered DH circulars and published evidence submitted to the Pay Review Body, statements from the British Medical Association and a New Deal implementation census of London Trusts from the London Regional Action. To understand what impact the New Deal and the EWTD have had on hospital specialties in delivering services, questions were included in the interviews with representatives of the Royal Colleges. Relevant college documents were also consulted.

The EWTD cannot be considered to be a UK Government policy. Thus, to devote a section to its implementation may not appear, at first sight, to be warranted. However, since 1991 the UK Health Departments have been pursuing their New Deal policy to improve the working conditions of junior doctors. This was a stepwise activity, initially aimed at reducing contracted hours of duty, followed by the reduction in actual hours on duty and actual hours worked. Consequently, in the run-up to 1 August 2004, the implementation date for the EWTD, most hospital departments had achieved some level of compliance.

Setting aside the financial consequences of the New Deal policy (for example, the financial penalties borne by trusts from excessive out-of-hours supplements paid to junior staff in hard-pressed specialties) the policy has greatly benefited postgraduate training. Through a combination of improved medical staffing levels and the introduction of innovative multi-disciplinary ways of working, trainees now have greater flexibility in participating in educational activities. Admittedly, scheduling departmental events (seminars, tutorials) becomes more problematic because the weekday availability of trainees is more restricted under a shift system, but this may be overcome if consultants' traditional patterns of tutoring and mentoring are revised. This is most likely to happen as the Modernising

Medical Careers policy, with its two foundation years, and its dependency on consultant assessments is rolled out in 2005. Indeed, it is hard to imagine that such a policy could have been contemplated in 2002, had the working-time pressures on junior doctors not been so comprehensively alleviated.

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## Section 6 The allocation of training opportunities

### 6.1 Introduction

Whereas the higher training committees of the Royal Colleges, as agents of the STA, inspect and approve hospital placements in training programmes, the DH has controlled the number and allocation of senior trainees (SpRs) who can be appointed to fill the approved placements. The annual budget made available by the DH to fund trainees (see Section 8) determines the number of trainees who can be appointed to centrally funded posts. Within this total, the Department seeks to control entry into each specialty by setting limits on the numbers who can be trained within each specialty. The objectives of this form of quantity control were:

- to limit the number of doctors in training to match the expected demand for consultants in the future;
- to prevent 'excessive' numbers training in 'popular' specialties. The hope was that some junior doctors would be encouraged to train in the less popular 'Cinderella' specialties if the opportunities for training in popular specialties could be restricted.

The Medical Workforce Review Team (see Figure 2.2) recommends annual changes in the number of senior trainees after evaluating information on future workforce demand and supply. While this permits an ordering of priority for different specialties, the available budget limits the numbers that can be funded. To partially relax this constraint, the DH augmented in 2003/2004 the number of posts that could be centrally funded by allocating maximum numbers of 'locally' funded numbers. Take-up of these locally funded allocations depended not only on training capacity but also on the willingness to pay of trusts and their primary care trust (PCT) purchasers. Table 6.1 shows the relative importance of new centrally and locally funded numbers by specialty allowed for 2003/2004.

**Table 6.1 Detailed recommendations for the number of centrally and locally funded posts, 2003/2004**

Specialty	Maximum number of locally funded NTN's available for 2003/2004	Centrally funded NTN's available for 2003/2004	Implementation by WDC or LD
A&E	80	0	WDC
Surgery			
Cardio-thoracic surgery (with emphasis on thoracic surgical training)	Nominal	5	LD
General surgery	200	0	WDC

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General surgery to support posts with general surgery of childhood component	Nominal	6	LD
Neurosurgery	15	0	LD
Otolaryngology	30	0	WDC
Paediatric surgery	6	6	LD
Plastic surgery	5	9	LD
Trauma and orthopaedics	90	4	WDC; LD senior posts
Urology	20	2	WDC
Ophthalmology	40	0	WDC
Cleft lip and palate	6	2	LD
Hand	2	1	LD
Head and neck	12	5	LD
Paediatric urology	Nominal	4	LD
<b>Psychiatry</b>			
Child and adolescent psychiatry	Nominal	2	LD
General psychiatry	15	30	WDC
Old-age psychiatry (dual training with General adult)	5	20	LD
Psychotherapy	Nominal	2	LD
Forensic psychiatry	Nominal	6	LD
Learning disabilities	Nominal	0	
<b>Cancer</b>			
Histopathology (see also oral pathology under additional dental specialties)	15	75	WDC
Clinical radiology (see also oral radiology under additional dental specialties)	Nominal	78	WDC
Clinical oncology	14	6	LD
Medical oncology	11	6	LD
Haematology	15	2	LD
Palliative medicine	15	0	LD
<b>Radiology</b>			

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Nuclear medicine	Nominal	1	LD
Obstetrics and gynaecology			
Obstetrics and gynaecology (new funding for family planning and reproductive health)	63	4	WDC/LD
Pathology			
Chemical pathology	Nominal	10	LD
Immunology	Nominal	1	LD
Microbiology and virology	10	8	LD
Allergy	Nominal	0	
Anaesthetics			
Anaesthetics	160	10	WDC
To support programmes with an intensive care medicine component	30	10	WDC
Medicine			
Endocrinology and diabetes mellitus	70	0	WDC
Gastroenterology	50	0	WDC
Geriatric medicine	80	0	WDC
Respiratory medicine	150	0	WDC
Renal medicine	40	0	WDC
Audiological medicine	Nominal	1	LD
Cardiology	40	0	WDC
Clinical genetics	Nominal	10	LD
Clinical neurophysiology	Nominal	0	LD
Neurology	20	10	WDC
Clinical pharmacology and therapeutics	Nominal	2	LD
Dermatology	20	20	LD
Genitourinary medicine	10	8	LD
Infectious diseases	10	2	LD
Occupational medicine	Nominal	0	
Rehabilitation medicine	Nominal	0	
Rheumatology	40	0	WDC

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Medical ophthalmology	Nominal	1	LD
Pharmaceutical medicine			
Public-health medicine			
Public-health medicine*	7	2	LD
Paediatrics			
Paediatrics	100	0	WDC
Paediatric cardiology	Nominal	5	LD
Dental			
Dental public health	Nominal	4	†
Oral and maxillo-facial surgery	Nominal	8	†
Additional dental specialties (oral pathology and oral radiology)	Nominal	4	†
Orthodontics	20	0	†
Restorative dentistry	Nominal	4	†
Paediatric dentistry	Nominal	4	†
Total	1516	400	

*LD, lead dean; NTN, national training number; WDC, workforce-development confederation.*

*The nominal ceiling in column B indicates that little scope is anticipated for local funding but where this can be achieved the lead dean will be able to agree up to five posts (not included in the total of 1516). Distribution: where distribution is by WDC the LD will be asked to advise.*

*\*We are proposing to run public health as a single training stream for both medical and non-medical staff, using the same funding.*

*†Slightly different arrangements will apply to the distribution of dental NTNs. Full details will be circulated shortly.*

*Source: Medical Workforce Review Team. 2003. Allocation of locally and centrally funded NTNs 2003/4. The Workforce Bulletin issue 59: 3 March 2003.*

## 6.2 Equity and the allocation of trainees

Once national totals for training numbers have been determined, it must be decided how to allocate these training opportunities to hospitals in different parts of the country. Until 2003/2004 total available numbers were allocated to regional deaneries, reflecting the historic distribution of training posts. This

tended to perpetuate the concentration of training numbers in the south of England and in major teaching hospitals. In 2003/2004 a new approach was adopted. The question raised was whether there might be a means of identifying an 'equitable' distribution of training numbers as opposed to replicating the historic pattern of distribution. This recognised that the availability of trainees not only contributes to service delivery but can affect the attractiveness of trusts to consultants. In several interviews it was also suggested that where an individual trains may affect the likelihood that, when qualified, they will apply for consultant posts in the area.

The new approach adopted by the Medical Workforce Review Team (MWRT) was based on the needs-weighted capitation formula used to allocate the NHS revenue budget to purchasers (currently PCTs). In the 1970s the DH recognised that NHS resources, allocated on the basis of historic provision (mainly beds) perpetuated regional inequalities in access. In 1976 the Resource Allocation Working Party (RAWP) recommended moving away from funding based on existing supply towards funding based on population need. This implied a significant redistribution of resources from the south east to other regions of England that appeared to have relatively low levels of provision for health care relative to need. Over time the formula for measuring relative population need has been refined but the principle remains unchanged. For each financial year the formula indicates the share of each purchaser in total available funding that would correspond to an equitable share. This equitable share becomes the 'target' and is compared to the actual budget of a purchaser. The distance from target is the difference between the fair and actual budget. Those purchasers with budgets significantly below a fair share are given relatively larger increases in funding compared to those with actual budgets closer to the target ([www.doh.gov.uk/allocations](http://www.doh.gov.uk/allocations)).

Application of this equity approach to the allocation of new training numbers required re-estimating the fair shares of NHS revenue funding by the WDC, the geographic unit for allocation of training numbers. This indicated the proportion of resources that the equity of access principle indicated 'should' go to each area. Applying these proportions to the existing number of trainees gave a distance from target; for example, the difference between actual numbers and the numbers indicated by so-called fair shares. The additional number of trainees approved for 2003/2004 were then allocated to WDCs, with those furthest from target given a larger share of the total available. WDCs in the London area, with historically the largest share of trainees, received a zero allocation.

This new system for allocating trainees can best be seen as an allocation of options to acquire trainees. Whether trusts within a WDC that had historically received few trainees can take the additional numbers allocated will depend on the training capacity of the trusts and, in the case of locally funded numbers, willingness to pay for trainees.

### **6.3 Training capacity**

It is important to note that a trainee is placed in a programme that requires rotation between hospitals. Ordinarily a trainee would spend 6 months or more in different hospitals in the rotation. The objective is to give a trainee a wider range of experience than would be possible in a single trust. This has important implications for the availability of trainees in smaller DGHs.

All SpRs will need to spend time in tertiary centres but they are expected to work in other hospitals to acquire experience of dealing with more routine clinical problems and procedures. Specialty training committees of the deaneries are responsible for organising rotations among hospitals with training approval. A hospital will not be included in a rotation if it lacks training capacity. This is usually a function of the number of consultants in the specialty. The Royal Colleges will not ordinarily consider a hospital with only one consultant in the specialty to have capacity for training (see Section 4). The colleges may not set throughput requirements for training places but, indirectly, the requirement of having more than one consultant in the hospital has this effect. Trusts are ordinarily not willing to finance more than one consultant in a specialty unless patient demand justifies the larger capacity.

In interviews it emerged that an additional constraint on training capacity is adequate capital investment, especially in the pathology and radiology specialties. In histopathology, for example, adequate laboratory bench space and microscopes are a necessity, yet the central funding only covers salary costs. In the current review of funding postgraduate medical education and training the issue of funding relevant infrastructure costs is being considered.

### **6.4 Conversion and re-mapping of posts**

The increase in locally funded posts includes moving existing funding for trust doctors into funding for a new training post as well as finding new money for a new training post. Current attempts to increase the number and mix of new training numbers reflect three pressures:

- to increase SpR numbers in order to accelerate achievement of targets for new consultants;
- to provide formal training opportunities for trust doctors;
- to implement changes to the first years of postgraduate medical training.

This third category reflects an important change to recent workforce planning. The number of SHO posts had been effectively frozen since 1998 when the DH issued a circular, saying:

*In 1997/98 our ability to support specialist registrar expansion was significantly compromised by the need to fund an additional 480 SHO posts created in 1996/97. Therefore, the limitation on the creation of additional SHO posts announced in EL(97)10 will continue until further notice. New funding should not*

*be used to create additional SHO posts unless there are exceptional circumstances...*

(HSC 1998/025; NHS Executive, 1998)

As part of the reform of PGME, with the introduction of two foundation years, it is necessary to increase the number of SHO posts (see Section 4). The redistribution of funding for trust doctors to new SHO posts is an important part of this process.

Table 6.2 summarises current policy on transfer of existing funding into new training posts.

**Table 6.2 Conversion or re-mapping junior doctor posts: initiatives enacted or announced March 2002–January 2004**

Type of post for re-mapping or conversion	Training post as the outcome of the process	Scheme and date initiated	% Basic salary re-mapped to deanery	Trust's revised responsibilities	Comments and sources
Re-mapping trust doctor (grade SHO) posts	SHO (GPVTS)	March 2002 (pilot) [1]; August 2002 [2]. The identified posts had to be approved by the JCPTGP subject to assurances that the posts complied with JCPTGP quality standards [3]	50%	Basic salary (50%); banding (dependent on out-of hours commitment); protected weekday time for GPVT activities; contracted study leave	(a) According to Sands' August 2002 letter [2] the pilot strategy lead to the recruitment of 84 trainees (b) According to [4] 53 new GP, VTS and SHO posts had been supported by re-mapping funding since August 2002 [4]
Re-mapping staff/trust doctor posts	SpR (NTN)	May 2002 [5]. Introduces the 'floors and ceilings' approach. The ceiling for a specialty is the total number of NTN (both funded and unfunded) which can be implemented by March 2004, if additional funding or conversions can be identified. This is in addition to conversions already identified...during 2001/2002... [5]	100%	Banding (dependent on out-of hours commitment which may differ from original post); protected weekday time for SpR training activities; contracted study leave; removal expenses	The guidance [5] explains two strategies by which unfunded NTN can be developed: conversions and re-mapping. With re-mapping, trusts had to be committed to leaving the (transferred) funding in MPET for the duration of at least one cycle of training (5–8 years). The <i>pro forma</i> also required the name of the PCT from whose baseline allocation funding would be transferred (by RLA reduction), and the name of the WDC to whose MADEL allocation funding would be transferred (by RLA addition) [5]; by August 2003, there had been re-mapping funding for 81 new SpR posts [4]
Conversion of existing training	Locally funded SpRs	March 2003 [6] announcement of locally	100%	Banding; protected weekday time for SpR	The guidance on the implementation of these proposals

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posts (e.g. FTTAs or LATs) or re-mapping local funding  <i>Note: A FTTA is a fixed-term training appointment; these are for doctors who have completed and/or who have been accepted for a type II training programme (e.g. doctors ineligible for indefinite UK residence); LAT is locum appointment training [7]</i>		and centrally funded NTN for 2003/2004; in addition to the 400 NTNs with central funding, 1516 NTNs were available to create SpRs with local funding		training activities; contracted study leave; removal expenses The guidance advised that 'Where possible, opportunities should be created for senior trainees (year 4/5) who would rapidly become fully trained specialists' [6]	[6] advised that 'For specialties without central funding, WDCs/deaneries will be expected to manage implementation by a mixture of (1) NTNs for flexibles/researchers/VTNs; (2) local funding, taking into account service configuration; and (3) conversion of SHO posts up to the limit for each specialty' [see the next entry in this table]
Conversion of SHO posts	SpR (NTN)	March 2003 [6] announcement that, to release bottleneck (into the SpR grade), trusts would have the opportunity to convert up to 1300 SHO posts into SpR posts; 700 in surgical specialties and up to 600 in other specialties  <i>Note: The proposal for</i>	100%	Banding (dependent on out-of-hours commitment which may be different from when the previous SHO post); protected training time	The statement in March 2003 (from the MWRT when announcing the NTN allocations for 2003/2004) said that the distribution of these [SHO] posts is being finalised and will be communicated separately [6], but this communication has not been found on the web. However, in June 2003, the Wessex Deanery mentioned that 'for England...a further 1300 NTNs [were] available specifically for conversions from SHO posts...' [8]

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<i>converting SHO posts to SpR posts was outlined in November 2002 (in a confidential document provided by J Curson)</i>					
Re-mapping trust doctor posts	SHO (Modernising Medical Careers)	December 2003 [9] Modernising Medical Careers Delivery Board wishes to increase the number of SHO posts in order to create new Foundation Year Two (F2) posts as part of Foundation Programmes: announced 2 December 2003; 'The view of the postgraduate deans is that these posts can be secured mainly through conversion of 'trust doctor' posts, although some if possible should be created from existing year 1 SHO posts'	50%	Re-mapping will be based on a unit cost equivalent to half the mid-point of the SHO scale plus employers' costs at 18% plus on costs at '£2800 (i.e. £20 000 at 2003/2004 pay levels) plus an element of non-pay costs for study leave (amount to be determined at deanery level)' [9]	Conversion exercise involves the trust, WDC and PCT [9]; funding to be re-mapped from PCT revenues to StHA/WDC MPET (MADEL) allocations and be cost-neutral for PCTs [9]  <i>Note: The Northern Deanery states that Modernising Medical Careers is to be fully implemented nationally by August 2005. 'This means that all foundation programmes in the Northern Deanery need to be defined for the job fair by April 04, be approved educationally by the PIMD [Postgraduate Institute for Medicine and Dentistry] and be ready for advert by 31st August 04' [10]</i>
Re-mapping of trust doctor posts or newly funded posts	SpR or SHO posts	January 2004; new SpR/SHO posts to help support the EWTB [11]; guidance issued by the London Deanery to trusts; educational approval must be sought: this being likely	100% for SpR; 50% for SHO	The trust must commit to re-mapping 100% salary costs for SpRs and 50% for SHOs plus on-costs, study leave, removal expenses, etc. [11]; out-of-hours banding (that may be	The trust must confirm that these costs (in adjacent column) will be re-mapped from service funding into the educational levy. In addition the trust must assume responsibility for the out-of-hours/banding costs for the posts. The trust needs to identify the

	the longest part of the process	lower than original post)	relevant PCT and indicate its awareness of the plans [11]
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GPVTS, General Practice Vocational Training Scheme; MADEL, Medical and Dental Education Levy; MWRT, Medical Workforce Review Team; MPET, Multi Professional Education and Training; RLA, resource limit adjustment; StHA, Strategic Health Authority; VTN, vocational training number; VTS, vocational training scheme.

Note: According to the DH, the term conversion applies when the funding for a post with existing educational approval (that is, the money is already identified within the educational levy) is diverted to fund another educationally approved post (for example, from SHO to SpR). The term re-mapping is used when money needs to be transferred to the educational levy to support a training post (for example, from an existing trust doctor post or from other sources; see source [5])

#### Sources for Table 6.2

- 1 Heard, S. 2002. Proposal for pilot strategy to develop additional GPs for 2004. *The Workforce Bulletin* issue 14: para 14.7, 12 March 2002. Available at [www.wdc.nhs.uk/bulletins/bulletin\\_14.php](http://www.wdc.nhs.uk/bulletins/bulletin_14.php)
- 2 Sands, T. 2002. *Strategy to develop additional GPs for 2004; COPMeD & COGPED strategy to produce additional general practitioners for 2004*. Available at [www.wdc.nhs.uk/bulletins/bulletin\\_33.php](http://www.wdc.nhs.uk/bulletins/bulletin_33.php)
- 3 Joint Committee on Postgraduate Training for General Practice. 2003. *Annual Report 2002/2003*. London: Royal College of General Practitioners
- 4 Anon. 2003. NTN re-mapping exercise and GP VTS conversion exercise. *The Workforce Bulletin* issue 80: para 80.2, 28 July 2003. Available at [www.wdc.nhs.uk/bulletins/bulletin\\_80.php](http://www.wdc.nhs.uk/bulletins/bulletin_80.php)
- 5 Department of Health. 2002. SpR/GPR increases in 2002/2003: ceilings and re-mapping. *The Workforce Bulletin* issue 24: 31st May 2002. Available at [www.wdc.nhs.uk/bulletins/bulletin\\_24.php](http://www.wdc.nhs.uk/bulletins/bulletin_24.php)
- 6 Medical Workforce Review Team. 2003. Allocation of locally and centrally funded NTNs 2003/4. *The Workforce Bulletin* issue 59: 3 March 2003. Available at [www.wdc.nhs.uk/bulletins/bulletin\\_59.php](http://www.wdc.nhs.uk/bulletins/bulletin_59.php)
- 7 British Council. 2002. *NHS training positions for non-EEA doctors* (section 3). The numbers game: training numbers explained). British Council. Available at [www.britishcouncil.org/health/nacpme/noneea.htm](http://www.britishcouncil.org/health/nacpme/noneea.htm)
- 8 NHS Wessex Deanery. 2003. *Unfunded/Funded NTNs 2003/2004. Postgraduate Medical Education*. NHS Wessex Deanery. Available at [www.wessex.org.uk/medical/ntn/](http://www.wessex.org.uk/medical/ntn/)
- 9 Anon. 2003. Increasing SHO numbers to support Modernising Medical Careers (MMC) pilot, 2 December 2003. *Chief Executive Bulletin* issue 197, 28 November–4 December 2003. Available at [www.doh.gov.uk/cebuletin/shonumbers.htm](http://www.doh.gov.uk/cebuletin/shonumbers.htm)

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- 10 Northern Deanery. 2003. *Modernising Medical Careers. Introduction. Postgraduate Institute for Medicine and Dentistry.* Available at [http://mypimd.ncl.ac.uk/PIMD\\_new1/med/content?page=222](http://mypimd.ncl.ac.uk/PIMD_new1/med/content?page=222) [see also for a February 2004 update on progress, available at [www.campus.ncl.ac.uk/pimd/documents/MMC/updateFeb04.doc](http://www.campus.ncl.ac.uk/pimd/documents/MMC/updateFeb04.doc)]
- 11 NHS London Deanery. 2004. *London Deanery guidelines for the development of training posts to support the EWTD.* NHS London Deanery

## **6.5 Summary**

This study set out to assess the extent to which local hospital services have been withdrawn for reasons associated with postgraduate training. What has emerged in this section is that the DH, since 2002, has lifted quotas on new training posts and these actions would have helped to retain local service configurations. Primary sources for the section were the *Workforce* and *Chief Executive Bulletins* issued regularly by the DH and documents from the Medical Workforce Review Team. Clarification on workforce planning and the implications of these policy changes was obtained through interviews with the leader for the Medical Workforce Review Team and with regional postgraduate deans and associate deans in two deaneries.

Historically in England, entry to higher training in individual specialties has been closely regulated by the DH, partly because the posts have been centrally funded, but more specifically, from a policy perspective, to ensure that the supply of trainees matches the expected demand for consultants, and to avoid an over-supply of trainees in popular specialties. The SHO grade had also been closed to the creation of new posts since the late 1990s. However, over 2 years, 2002–2004, these controls were eased by either converting or re-mapping posts. Conversion applies when funding for a post with existing educational approval is diverted to fund another educationally approved post (for example, from SHO to SpR); re-mapping occurs when the funding for a post without educational approval is transferred to the educational levy held by the regional deanery to support a training post (for example, a post for a trust doctor can now be used for training an SHO). The planned introduction of the Modernising Medical Careers training programme was one of the drivers for expanding the SHO grade.

The other major advance during this period was the introduction of an equity-based allocation process for new higher training opportunities based on the needs-based capitation system, with the purpose of encouraging trusts in WDCs outside teaching centres to become more engaged in higher training. However, as central funding was only available for a proportion of the new higher training slots, widespread expansion of the SpR grade was dependent upon the trusts identifying local sources of funding. Having a suitable departmental infrastructure for adequate training in a particular specialty was another problem that trusts had to face. The overall impact of these workforce policy initiatives has still to be assessed.

## **6.6 Reference**

NHS Executive. 1998. Funding postgraduate medical and dental education in 1998/99 and Specialty Workforce Advisory Group recommendations: Higher specialist training numbers, 1998/99. Health Service Circular HSC 1998/025. Leeds: NHS Executive

## Section 7 Productivity

### **7.1 Introduction**

Concern with the distribution of trainees among trusts is a reflection of the fact that junior doctors can contribute to service delivery in addition to meeting the core objective of training the next generation of doctors. It is possible to obtain some feel for the order of magnitude of the service contribution by estimating production functions.

Changes in medical education outlined in Section 4, changes in work patterns presented in Section 5 and changes in the allocation of trainees examined in Section 6 can all be expected to affect the observed impact of trainees on delivery of patient services. It will be important that the NHS is able to monitor the impact on patient services through the use of routine data.

One objective of the present project was to examine the scope for using existing NHS datasets to start an exploration of the underlying relationships between the numbers of different types of staff and the output of care. We linked data from the 2002/2003 HES and the NHS Hospital, Public Health Medicine and Community Health Service Medical and Dental Workforce Census conducted on 30 September 2002 at trust level. Ideally one would like to link at site level but the Medical Workforce Census does not have site-level information. We used multiple regression to investigate the relationships between specialty output (measured by the finished consultant episodes (FCEs) in the specialty) and the numbers of different types of medical staff in the specialty. As before we grouped staff into three categories: consultants, trainees and NCCGs.

Since the study is exploratory we did not address a number of problems, some of which are likely to affect more elaborate studies, but some of which can be resolved:

- (i) *Timing* HES provide information on total output over a financial year (April 2001–March 2002) whereas the Medical Workforce Census gives a snapshot of staff in posts on one day (30 September 2001). Thus the staff variable is likely to be an inaccurate measure of the total inputs available over the entire financial year. One obvious but possibly expensive solution is to have more frequent counts of staff. Alternatively, it would be possible to take expenditure over the year on different types of staff from the Trust Financial Returns (TFR3) and divide by a suitable measure of staff pay to get a measure of the volume of staff inputs over the year.
- (ii) *Other inputs* Since this is an exploratory study with limited resources for the collation, cleaning and statistical analysis of databases, we do not take account of other inputs such as nursing

staff and the numbers of beds. Data from the Non-Medical Workforce Census on nursing and other non-medical staff are available at trust level but not by specialty. There is also information on occupied and available beds at trust level. Although the database makes a distinction between acute, maternity, geriatric, mental illness and learning disability, the acute category is not divided by specialty. We did attempt to allow for these missing variables by undertaking some seemingly unrelated regressions which allowed for the fact that there may be unobserved common trust-level factors affecting output by simultaneously estimating the regressions for the separate specialties. The results were not very different from those obtained by separate regressions for each specialty and we do not report them.

- (iii) *Patient characteristics* Patients differ in unobservable ways that lead to them receiving different levels of care (for example, durations of stay may be longer for patients without relatives to care for them if discharged). Thus measures of patient population characteristics should ideally be included in an analysis of staff productivity. It should be possible to include such variables in future analysis, either by using HES fields for diagnosis and procedures to measure severity of illness or by using socioeconomic information from other databases attributed by patient HES geographic identifiers.
- (iv) *Endogeneity of inputs* A proper statistical model of the production of care ought to be based on a theoretical model that would guide estimation and interpretation and warn about the dangers of ordinary least-squares regression of the relationship between inputs and output. Such a model would address the way in which input and output levels are chosen and suggest ways of dealing with potential endogeneity bias: there may be unobservable factors that affect both the output of care and the levels of the inputs.

## **7.2 Methods**

We used Stata version 7SE to run ordinary least-squares regressions of FCEs in a specialty in a trust on the numbers of consultants, trainees and NCCGs. We also included a dummy teaching-trust variable (*TT*) with the value 1 if the trust was a teaching trust, and 0 if it was a non-teaching trust.

We report results from estimating equations of the form<sup>1</sup>

$$y = \beta_0 + \alpha_0 TT + \beta_1 consultants + \beta_2 trainees + \beta_3 NCCDs + \beta_4 consultants * trainees + \alpha_1 TT * consultants + \alpha_2 TT * trainees + \alpha_3 TT * consultants * trainees$$

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<sup>1</sup> We also experimented with translog and quadratic forms.

where the dependent variable was either the number of FCEs or the natural log of the number of FCEs.

The equation form allows us to test whether consultant productivity is affected by having more trainees staff to supervise ( $\beta_4$ ). We can also test whether consultants and trainees are more or less productive in teaching trusts and whether the effect on consultant productivity of having more trainees to supervise is greater or smaller in teaching trusts. As can be seen in Table 7.1 there are significant differences in the staffing of teaching and non-teaching trusts.

**Table 7.1 Mean staff numbers by type of trust and specialty**

Specialty	Trust status	Consultants	Trainees	NCCGs
General surgery and urology	Non-teaching	9	17.5	2.7
	Teaching	18.6	43.1	2
Obstetrics and gynaecology	Non-teaching	6.1	10.7	2.0
	teaching	13	27.7	2.2
Paediatrics	Non-teaching	6.1	12.3	2.6
	Teaching	17.0	37.7	2.5
General medicine	Non-teaching	15.8	13.2	2.8
	Teaching	45	64.3	4.1
Trauma and orthopaedic surgery	Non-teaching	6.7	10.8	2.4
	Teaching	10.6	17.3	0.7

### **7.3 Results**

Here we illustrate the results by discussing one specialty in detail and comment briefly on the salient points from the other regressions. The full set of results for the other five specialties are given in Appendix 6.

Table 7.2 shows the results from estimating linear and and Table 7.3 log-linear versions of the production function for obstetrics and gynaecology. Statistically significant variables are highlighted in italics. The results from the regressions on both the number of FCEs and log(FCEs) are similar and have broadly the same inference.

**Table 7.2 Production function for obstetrics and gynaecology**

Dependent variable	Obstetrics and gynaecology FCEs
Number of observations	165
Adjusted $R^2$	0.71
$F$ test	0.00

**Regression results: obstetrics and gynaecology FCEs**

Variable	Coefficient	Standard error	t stat	P value
Constant	-104	730.26	0.14	0.89
Teaching status	4892	2327.26	2.1	0.04
Consultants	1009	186.14	5.42	0.00
Training staff	428	93.57	4.58	0.00
NCCG staff	-16	155.87	0.10	0.92
Consultants*training	-18	6.06	2.99	0.00
Teaching*consultants	-614	283.96	2.16	0.03
Teaching*training	-737	133.88	5.51	0.00
Teaching*consultants*training	46	9.67	4.8	0.00

Considering Table 7.2, the regression shows a positive and significant effect of consultants and training staff, suggesting a marginal productivity of approximately an additional 1000 FCEs per consultant and an additional 400 FCEs per training staff. The ordering of these effects is generally consistent across specialties with consultants having a higher productivity than training staff. For this specialty (but not for others) NCCG staff have a negative but non-significant coefficient, implying no effect of the non-training, non-consultant grades on output. The interaction terms of teaching-trust status with consultants and with training staff are both negative and significant. This indicates that trust-teaching status has a negative effect on marginal productivity, in terms of FCEs, for both consultants and training staff. In the case of consultants, the marginal product of a consultant in a teaching trust falls from 1000 to 400 FCEs. The magnitude of the negative coefficient on training staff is such that the marginal product of training staff in a teaching trust is approximately -300 FCEs. Both these figures indicate the burden of teaching medical students, research and increasing trainees in teaching trusts. The negative coefficients of the teaching interactions are a consistent feature across all specialties.

The number of doctors of various grades does not appear to be a good guide to the capacity of teaching trusts. The positive and significant teaching-trust dummy variable indicates that trusts with teaching status have greater numbers of FCEs. However, the teaching trust dummy is possibly picking up a capacity/size effect other than that taken into account by just staff size. For example, the average available bed spaces in teaching trusts are almost double the number

**Table 7.3 Production function for obstetrics and gynaecology (logs)**

Dependent variable	Natural log (Obstetrics and gynaecology FCEs)
Number of observations	150
Adjusted $R^2$	0.56
F test	0.00

**Regression results: log (obstetrics and gynaecology FCEs)**

Variable	Coefficient	Standard error	t stat	P value
Constant	5.60	2.58	21.69	0.00
Teaching status	3.97	1.19	3.35	0.00
Consultants	0.43	0.05	8.61	0.00
Training staff	0.16	0.02	6.54	0.00
NCCG staff	0.00	0.04	0.13	0.90
Consultants*training	-0.02	0.00	8.78	0.00
Teaching*consultants	-0.46	0.11	4.09	0.00
Teaching*training	-0.19	0.04	4.34	0.00
Teaching*consultants*training	0.02	0.00	5.26	0.00

available in non-teaching trusts. It is plausible that through a correlation with unobserved size variables the regression is finding a consistent but spurious relationship between FCEs and the teaching-status dummy variable.

Across all specialties, the trend has been for adjusted  $R^2$  values of between 0.85 (general surgery and urology) and 0.62 (general medicine). Inference across specialties is similar, with a positive teaching-trust dummy, higher marginal productivity of consultants relative to NCCG staff and training staff and a lower productivity of consultants and training staff in teaching hospitals. The relative productiveness of training and NCCG staff appears specialty-specific. Training staff show a higher productivity than NCCG staff in obstetrics and gynaecology but lower productivity than NCCG staff in trauma and orthopaedic surgery, general surgery and urology, and paediatrics. Overall, the regression results are generally plausible with  $R^2$  values indicating that a significant amount of variation in output has been explained.

## 7.4 Summary

Changes in the arrangements for training of doctors highlighted in Section 4 can be expected to reduce the service contribution of trainees while increasing the number of consultants in NHS hospitals. The joint impact on service delivery is difficult to predict until the changes in training are fully implemented. However, as these programmes roll out, policy-makers need to monitor the emerging effects on productivity. This can be done using routine datasets but will require increased sophistication of the modelling.

Although our regression modelling of the relationship between medical staff mix and output was exploratory we feel that we have shown that it is possible to extract useful information from routine NHS datasets on outputs and inputs. Future work should proceed by

- (i) linking in additional databases on inputs like beds and non-medical staff;
- (ii) using several years of data to construct a trust-level panel as the most powerful means of allowing for unobservable (with current datasets) trust-level factors.

Given the methodological and data problems noted above, our specific results should be treated with caution. But we believe that policy on the appropriate mix of staff types should be informed by the systematic analysis of this type of routine data. Knowledge of how alternative mixes and amounts of medical staff affect the output of medical care and the output implications of teaching are essential for sensible decisions about manpower policy. It should be supplemented by information on input costs and by much better measurement of the outcomes of medical care.

Existing data limitations mean that the service-delivery output associated with NHS employment of trainees and other non-consultant grades is defined as the number of patients treated (approximated by FCEs). The information the NHS needs is the effect of staff mix on the quality of health outcomes as well as on the numbers treated. This will become more urgent with the roll out of policies on payment by results and patient choice. The impact on cost of different mixes of medical staff will affect the viability of trusts under payment by results. In turn this will affect the willingness of trusts to provide training in different specialties.

## Section 8 Financial issues

In staffing hospitals for the delivery of services, there is a high dependence on employment of doctors in training. Decisions on staffing must be made in the face of several key constraints.

- National waiting-time targets for particular specialties increase the incentive to employ particular types of doctors.
- National workforce planning has limited the number of junior doctors available for employment by trusts. At the time of writing these constraints are being relaxed.
- The costs to the trust (and therefore purchaser) have changed significantly in recent years. The main changes have been in the share of employment costs borne directly by the trust and the costs of non-compliance with the New Deal. With the introduction of payment by results, adjustments to tariffs to reflect the costs of training will further alter the trade-off faced by trusts in deciding the mix of grades to employ.

For an individual trust, the binding constraint can be waiting-time targets, the number of trainees available or the costs of employing a trainee. Throughout this report reference has been made to funding issues. In this section we draw together some of the main financial issues at the interface of PGME and service provision. It is important to note that the financial framework is currently being reconsidered and it is not possible to identify the key financial incentives that will operate over the next few years.

### **8.1 The funding framework**

National funding for postgraduate medical education and training has been a long-standing element of the NHS. The formalities change with each reorganisation of the NHS. For present purposes the key elements stem from the 1996 abolition of the Regional Health Authorities. Three national educational levies, top-sliced from the budgets of Health Authorities, were introduced in April 1996 as a means of providing support for education and training in the NHS. The three levies were as follows (Department of Health, 2000b).

- (i) Service Increment for Teaching (SIFT), paid to hospitals and general practices at which medical and dental students are placed for their clinical teaching to reimburse the additional costs of supporting this activity.
- (ii) The Non-Medical Education and Training Levy (NMET), which supports pre- and post-registration non-medical education and training.
- (iii) The Medical and Dental Education Levy (MADEL).

The central training budget for doctors (MADEL) was allocated to deaneries who would transfer the funds to trusts for approved trainees. The training grades allocation was used by the postgraduate deans in England to fund:

- 50% of basic salary costs of all full-time post-registration trainees;
- 100% of basic salary costs for pre-registration trainees;
- all non-recurrent costs of training (for example, costs associated with appointing staff to hospital training posts);
- 100% of basic salary costs for all part-time (flexible) trainees.

Hospital trusts met:

- 50% of basic salary costs of all full-time post-registration trainees;
- 100% of additional duty hours paid for both full-time and flexible trainees;
- locum costs associated with sickness, annual leave or vacancy.

In England the level of funding via MADEL accounted for less than 50% of the *total* salary costs of trainees. In Scotland, however, the postgraduate deans funded 100% of basic salaries for all trainees.

The deans were constrained over creating new training grade opportunities (notably at SHO level). The basic principles that applied to new training grade opportunities in 1998/1999 were (NHS Executive, 1998):

- (a) Deans may only give approval to training grade posts or placements which they can afford to fund recurrently at 50% of basic salary (100% for flexible trainees, public-health trainees and PRHOs) from their 1998/99 budgets;
- (b) Agreement to a new post or placement must be secured from the employing trust in consultation with the relevant [Health Authority(ies)] before recruitment commences;
- (c) Deans may reconfigure posts and placements as appropriate using existing MADEL funding;
- (d) Deans may not give manpower approval to a post or placement which a trust or [Health Authority] offers to fund at 100%. Training grade opportunities should not be created solely to meet service pressures. The best option to meet service needs is a career grade doctor not a training grade doctor; and
- (e) Deans may use any slippage in their budgets to fund new posts or placement; at more than 50% in the first year only.

The *NHS Workforce Planning Review: A health service of all the talents*, published for consultation in April 2000 (Department of Health, 2000a), recommended an integrated approach to workforce planning. In April 2001, the three educational levies (SIFT, NMET and MADEL) were formally merged with the creation of the Multi

Professional Education and Training (MPET) budget. Although the merger allowed some virement between them, they have continued to serve their professional groups in different ways (Department of Health, 2002). MPET (MADEL) continues to support the range of salaries and functions of doctors in training identified in 1996. Thus the main difference is its allocation route. MPET (MADEL) is now disbursed through strategic health authorities to specific WDCs linked to postgraduate deaneries. From 2002, 100% of basic salary costs for SpRs has been paid by deaneries. As of 1 April 2004, SHO's, previously 50% funded by MADEL, will become 100% funded.

As pointed out above, locally funded trainees are becoming increasingly important in England and it is necessary to distinguish between centrally funded posts and locally funded training posts. When an existing non-training post is converted into a training post, the funding for that post must be transferred from the trust to the deanery. This implies a long-term commitment (5–8 years) and a risk to trusts if, for example, the post became unexpectedly vacant and a locum doctor who was not a trainee had to be engaged. The funding for the post from the deanery might have to be re-negotiated.

## **8.2 Banding**

The cost to a trust of employing a junior doctor is not only affected by the availability of central funding for basic salary but also by penalties introduced in 2000 to give trusts incentives to reduce the number of hours worked by junior doctors. From 1 December 2000 remuneration for out-of-hours working was based on a banding system. The bands 'reflect whether the post is compliant with the hours controls and rest periods in the junior doctors New Deal, and also whether the doctor works up to 40, 48 or 56 hours a week, the type of working pattern, the frequency of extra duty and the unsocial nature of the working arrangements' (London and South East Regional Action Team, 2002). The longer or more unsocial the hours worked, the higher the band applied to a post (Table 8.1 and Section 5).

**Table 8.1 Pay banding arrangements for junior doctors**

<b>Band</b>	<b>1 December 2000</b>	<b>1 December 2001</b>	<b>1 December 2002</b>
Band 3	62% (1.62)	70% (1.7)	100% (2.0)
Band 2a	50% (1.5)	60% (1.6)	80% (1.8)
Band 2b	42% (1.42)	42% (1.42)	50% (1.5)
Band 1a	42% (1.42)	42% (1.42)	50% (1.5)
Band 1b	30% (1.3)	30% (1.3)	40% (1.4)
Band 1c	20% (1.2)	20% (1.2)	20% (1.2)

*Percentages represent the proportion of the basic salary received in addition to the basic salary.*

*Source: London and South East Regional Action Team (2002).*

To take an extreme case, a junior doctor whose hours placed him or her in Band 3 would be paid double the basic salary for that post. One-hundred per cent of the basic salary is paid by the deanery but, because of the hours worked, the trust must pay an additional amount equal to the basic salary. The marginal cost to a trust of increasing the hours worked by a junior doctor can be very high. While this system was intended to provide an incentive for trusts to reduce the hours of junior doctors, it had some perverse effects. An SpR in band 3 could be earning more than the consultants supervising him. Steps taken by the trust to reduce the hours worked by juniors were not necessarily welcome to the junior doctors themselves, who would see movement from, say, band 2a to band 1c as a salary cut. Monitoring the success of trusts in meeting the reduced working-time targets of the New Deal relied on junior doctors reporting the hours they worked accurately. The Pay Review Body in 2004 noted that there was limited co-operation of junior doctors in the monitoring exercises (Department of Health, 2004).

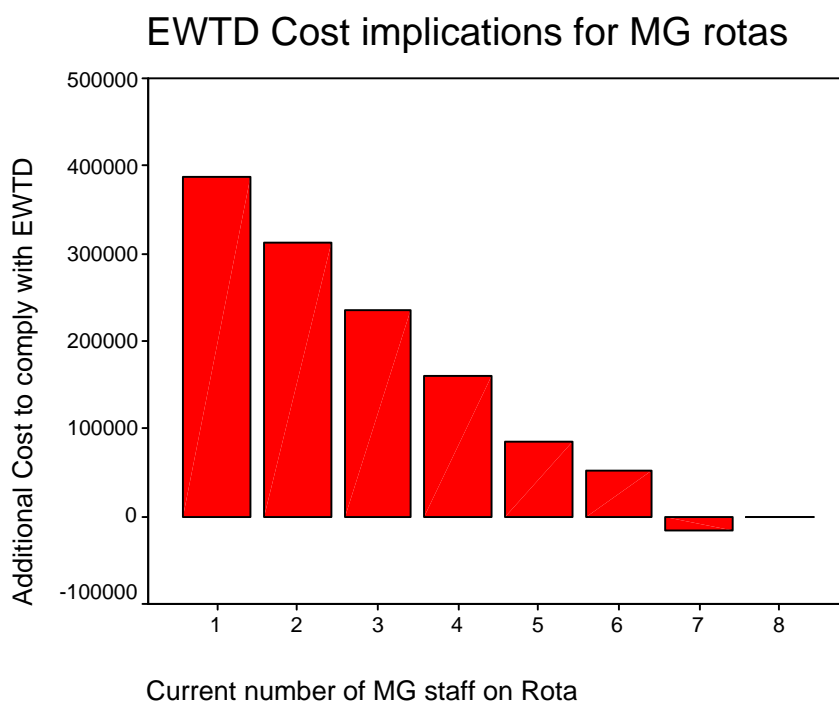
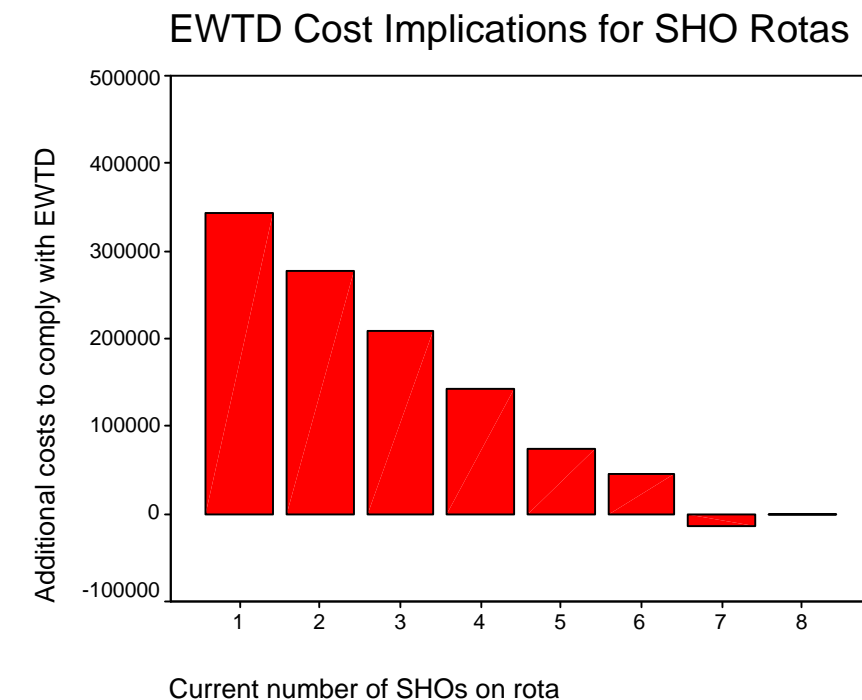
The banding system was agreed with the British Medical Association for a 3-year period. The Pay Review Body has argued for a fresh consideration of pay for doctors in training that avoids the disincentives of the present system and enables resources to be redeployed to finance extra capacity as junior doctors' hours are reduced (Department of Health, 2004).

### **8.3 The cost of moving to EWTD compliance**

Because of the limited number of centrally funded posts, any increase in staffing to become compliant needs to be funded by the trust. This is either through the recruitment of non-training grades, especially trust doctors, or local funding of new trainees. In either case, there is a cost to the trust. It has been suggested that the financial burden of increasing staffing to the levels necessary for compliance could be significant for a trust. In some cases this may be true; however, the marginal cost of a new post can be considerably below the wage paid. As the hours of existing doctors are reduced, trusts no longer have to pay the wage supplements dictated by the banding system. In some cases the marginal cost of an additional junior doctor can be negative.

With the detailed data available from the census of the Royal College of Paediatrics, it was possible to obtain an idea of the cost implications of increasing staff to levels that would be compliant with the New Deal and EWTD (Figure 8.1). The negative marginal cost for a rota of seven becoming compliant is clear in Figure 8.1. It is generally assumed within this specialty that a single rota of eight is needed to be compliant with EWTD. As seen in Section 4, in this specialty in 2001 most single rotas had five or six junior doctors. As the marginal cost falls, if new junior doctors are as productive as existing trainees we

**Figure 8.1 The marginal cost of becoming EWTD-compliant: paediatrics**



would expect to see an increase in the productivity of the unit. In a world where an employer can save money by taking on an additional worker and they are not observed to do so, the binding constraint is the availability of junior doctors rather than the cost.

## **8.4 Tensions**

Funding additional training posts now to increase the medical workforce in the future creates inevitable tensions. Where there are limited numbers of centrally funded posts PCTs are called on to fund new training capacity. Most training is focused on acute trusts while PCTs have a Government-supported agenda of moving services out of the secondary sector and improving community health care. PCTs also have national waiting-time targets for, primarily, elective surgery. If new posts are to be funded in hospitals, the PCT focus will be on those specialties relevant to waiting-time targets rather than the national concern with shortages across the range of specialties.

National policy is to even out the distribution of training opportunities across the country. However, to increase training capacity in trusts with historically low capacity, it is frequently necessary to employ more consultants as trainers. The cost of extra consultants falls on PCTs, not the national training budget. In our review of the business plans of WDCs, we found that most cited targets for trusts to increase consultant numbers. If PCTs are willing to finance this expansion there may be an improvement in the distribution of training capacity. However, if, as at present, most expansion in trainees must be locally financed, we must expect PCTs in the trainee-deficient parts of the country to be called on to finance the extra trainees as well as the extra consultants. Existing financial arrangements may not be appropriate if Government objectives are both to even out the distribution of trainees and encourage PCTs to alter the balance of NHS expenditure away from the secondary sector and towards the primary care sector.

The financial incentives of the system are soon to undergo another fundamental change. As part of the DH plan to introduce payment by results, a new system to govern financial flows is being introduced. The Government is setting a fixed-price National Tariff for treatment of NHS patients. The DH wants to create a level playing field between competing trusts and feels that this requires adjustment for the costs of medical education and training to trusts. The Department will soon publish its proposals for estimating the costs of training and the consequent change to the distribution of funding for training. The objective is that the part of the cost of a trainee that represents contribution to service delivery will be covered by the National Tariff and new principles will be applied to distribution of the non-service costs. The procedure should apply to both locally and centrally funded trainees. Until the proposals are published it is impossible to say what the impact will be on the incentives to provide training places in trusts.

## **8.5 Summary**

Previous sections have examined changes to medical education and training that should make it easier for smaller trusts to employ doctors

in training. Whether they are able to take advantage of this opportunity will depend on the financial arrangements in place.

Evidence presented in this section was based on analysis of official documents relating to funding and data supplied by the Royal College of Paediatrics. The evidence suggests that the financial regime in place leading up to the present pressure to meet EWTB requirements has created a situation where increasing staff numbers to become EWTB compliant may be less onerous than previously expected. We were only able to explore this issue for one specialty where data were available at a sufficient level of detail. Such data should be collected for all specialties.

Policy is to reduce the concentration of doctors in training and increase their numbers. However, it is not clear that the financial constraints facing PCTs and trusts will accommodate this policy. We still do not know how the new regime of payment by results will account for the costs of training. We do know that current policy to relax controls on training numbers depends on local rather than central funding. It is too early to assess the willingness of local purchasers to pay for these new trainees. The policy of decentralised purchasing may be in conflict with the policy of decentralising the distribution of junior doctors.

## **8.6 References**

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## Section 9 Modelling access and reconfiguration

This study was undertaken to investigate whether changes in PGME were leading to increased concentration of patient services. The concern was to identify trends that may reduce access. If developments in medical training were encouraging concentration, we wanted to identify the reasons for the change and whether there were alternative service configurations that would protect or enhance patient access.

A literature search was undertaken to identify any new evidence on the relationship of service concentration to patient access. There were no significant additions to results reported earlier (Place, 1997; Goddard and Smith, 1998). Increasing distance to services does reduce utilisation but primarily for first contacts – that is, with GPs and outpatient clinics.

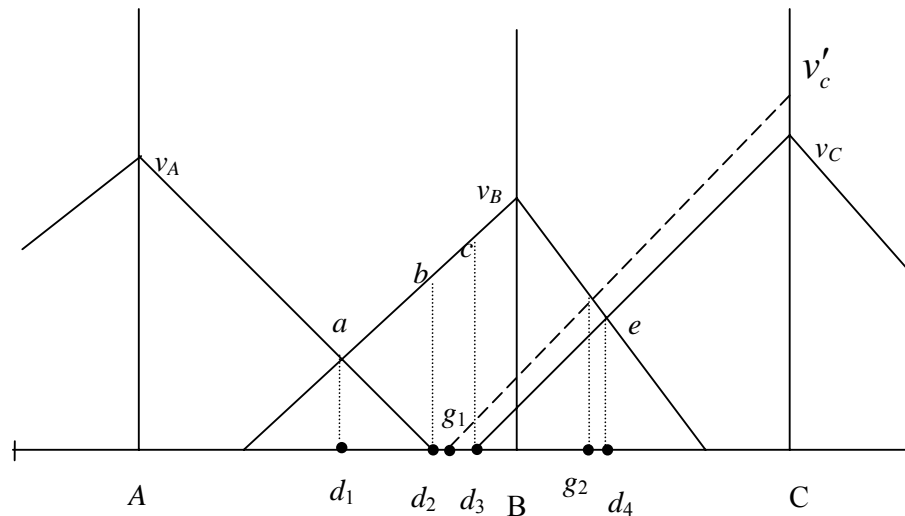
The changes taking place in medical training are likely to reduce pressure for concentration but implementing the New Deal and EWTD is leading to reorganisation of service delivery. The patterns of change tend to be specialty-specific. It is too early to say how experiments underway will evolve into new patterns of delivery or how patients may respond in terms of their use of services. Reconfigurations that reduce patient access remain a possibility. Part of our remit was to examine the feasibility of modelling emerging impacts on utilisation of changes in the location of services. The next section sets out a basic model for this type of analysis and discusses the potential usefulness of routine data in monitoring change.

### **9.1 Modelling the effect of site closure withdrawal on utilisation**

The demand for services at a site by a patient population is affected by the characteristics of the site, the characteristics of substitute sites, complementary supply provision (for example, primary care) and the characteristics of patients. This is illustrated in Figure 9.1, which provides a simple Hotelling-type model of utilisation of elective care. Patients are distributed uniformly along the road and incur increasing distance costs the further they are from the sites located at *A*, *B* and *C*. Patients located at *A*, *B* and *C* have the lowest distance cost and get a benefit from treatment of  $v_A$ ,  $v_B$  and  $v_C$ . The negative sloped lines from  $v_A$ ,  $v_B$  and  $v_C$  show the benefit net of distance cost for patients located at each point on the road. The net benefit from treatment at a site depends on the quality of care provided at the site, waiting times, the availability of complementary services, such as GP aftercare, and the characteristics of patients.

**Figure 9.1 Choice of site and effects of site closure**

When site *B* is open it is used by patients in  $d_1$  to  $d_4$ . When site *B* closes patients in  $d_1$  to  $d_2$  use site *A*, patients in  $d_3$  to  $d_4$  use site *C*, and patients in  $d_2$  to  $d_3$  do not use any site because of increased access costs.



Patients go to the site that yields the highest net benefit, provided it is positive. Thus with three sites, patients to the left of  $d_1$  go to site *A*, those between  $d_1$  and  $d_4$  go to site *B* and those to the right of  $d_4$  go to site *C*. The catchment area for a site depends on its characteristics and the characteristics of other sites. For example, an increase in waiting times that reduces  $v_A$  would shift  $d_1$  to the right, increasing use of site *B* and decreasing use of site *A*.

Suppose that site *B* is closed and the facilities at sites *A* and *C* are changed so as to keep their net benefit curves unchanged. Then patients between  $d_1$  and  $d_2$  who previously used site *B* will now use site *A*. They are, however, worse off as a result of the site closure, despite the fact that site *A* has higher quality ( $v_A > v_B$ ), because they previously showed that they preferred the proximity of *B* to higher quality at *A*. The loss to these patients is proportional to the area  $abd_2$ . Similarly, patients between  $d_3$  and  $d_4$  who previously used site *B* will now go to site *C* and are worse off by the area  $d_3cv_Be$ . Finally, patients between  $d_2$  and  $d_3$  now do not use any site and are worse off by the area  $d_2bcd_3$ .

The closure of site *B* is likely to shift the net benefit curves. For example, if the facilities at site *B* are transferred to site *C* (perhaps because site *B* is closer to site *C*) then waiting times at site *C* will fall: it gets all the capacity from site *B*, which previously treated all patients between  $d_1$  and  $d_4$ , but only treats additional patients between  $d_3$  to  $d_4$ . Waiting times at site *C* will fall and the net benefit

curve will shift upward as shown by the dashed line. Then the catchment area of site *C* becomes all points to the right of  $g_1$  rather than to the right of  $d_2$ . The upward shift in the net benefit curve (due to lower waiting times) means that site *B* patients between  $g_2$  and  $d_4$  are actually better off because of the site closure, although the remainder are worse off. Moreover, old site *C* patients to the right of  $d_4$  are also better off. There may also be shifts in the net benefit curve for site *A* that will affect old site *A* patients and those who transfer from site *B* to site *A*, but we do not show these.

Consideration of this simple model suggests that to assess the effect of site closure we need to know how patient utilisation is affected by distance, site quality and patient characteristics. Empirical work supports the suggestion (Luft *et al.*, 1990; Tay 2003). Modelling the effects of site closure requires models of utilisation and of likely changes in endogenous factors whose values are determined by the supply and demand for care.

Econometric analysis of site usage is based on probabilistic discrete-choice models in which patient benefit from each site is a function of patient and site characteristics plus random factors, with the patient choosing the site with the highest net benefit (Cremer, 1991; Section 3). The advantage of the econometric approach is that it provides more detailed information on the effects of patient and site characteristics on the use of sites and so is better suited to distinguishing the effects of site closure on different types of patient. For example, Tay (2003) linked hospital-level data to individual-level data for Medicare patients who had been admitted to a hospital after an acute myocardial infarction (Medicare patients are not charged for their care so that their choice of provider is not affected by price). She found that not only did quality variables affect the choice of hospital but that the impact of quality factors differed by gender, age and ethnicity. She used the estimated model to simulate the effects of increasing quality and of closing a hospital. Closure did not lead patients to shift to other providers in proportion to their market shares: patient switches were also influenced by quality. It would be possible, although this was not done by Tay (2003), to use this type of model to investigate the effect of closure on different social groups in terms of the additional distances they have to travel and to see which groups are more likely to choose lower-quality providers when their existing provider closes.

Such modelling requires data on patient and site characteristics and our interest here is in whether it is currently feasible to estimate sensible models of either type with the available datasets.

## **9.2 Data scoping: Hospital Episode Statistics**

National data on admissions (including day cases) are available in Hospital Episode Statistics (HES), which contain individual-level information on admissions for all FCEs. A patient who moves between

specialties after admission will generate more than one FCE during their spell in hospital. Since reconfiguration of services may vary across specialties it is data on FCEs rather than on spells that are relevant for examining the effects of the WTD and training requirements on access. Quarterly data are available but are not cleaned to the same standards as the annual data.

### **9.2.1 Specialty**

HES has fields relating to the specialty of the consultant responsible for each episode. *Mainspef* identifies the specialty under which the consultant is contracted and *tretspef* the specialty in which the consultant was working at the time care was provided. The *consult* field enables the individual consultant to be identified, although this requires special permission. Other fields that provide information about the type of care provided are the 14 diagnosis fields (*diag\_nn*) for ICD-10 codes and 12 procedure fields (*oper\_nn*) with OPCS4 procedure codes. A combination of these fields will enable the type of care provided and the specialty to be identified.

### **9.2.2 Location of treatment**

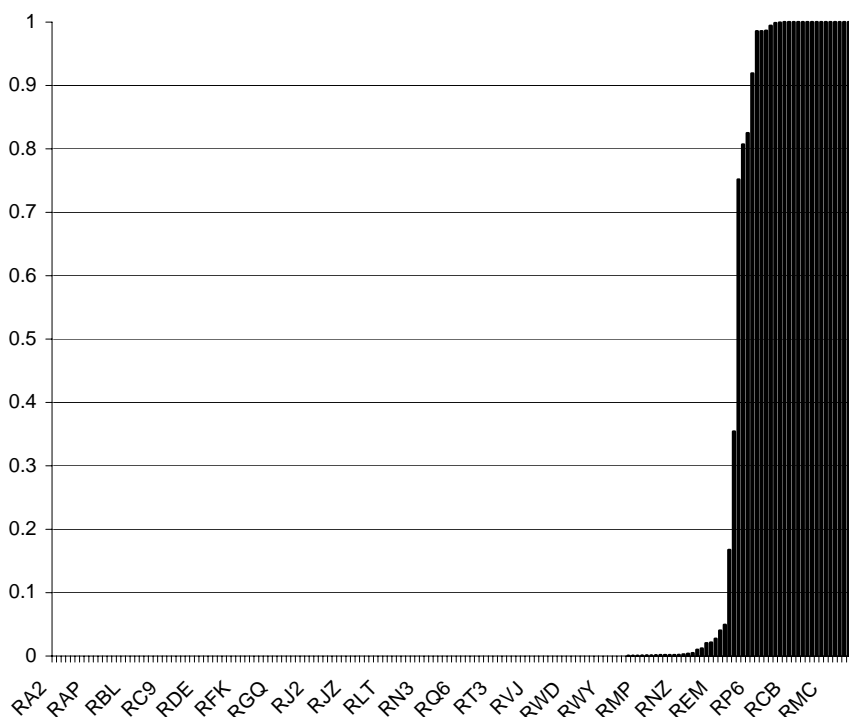
Since most acute trusts have more than one site it is essential for models of access to have data on the site within the trust at which care was provided, not just on the trust. There are two HES fields with information on the site. *Procode* is a three- or five-alphanumeric field. The first three symbols identify the organisation (trust) providing care and are the codes assigned by the National Administrative Codes Service of the DH ([www.nhs.uk/nacs](http://www.nhs.uk/nacs)). Some records have five symbols in the field and in these cases the last two symbols identify the site at which care is provided, unless they are 00. The provider code (the first three digits) is subject to data cleaning so that the code must be a valid code as assigned by Organisation Codes Service (OCS). *Sitetret* is a five-alphanumeric symbol field where the last two symbols identify the site of treatment and the first three the provider. The field is not subject to data cleaning.

The DH uses data quality as a performance indicator and produces a data-quality indicator (DQI) for each trust based on the proportion of valid entries in a number of fields. *Procode* and *sitetret* are not included in the DQI (though the ethnicity variable is; see below). Given the importance of being able to identify the treatment site for modelling the effects of service configuration we investigated the accuracy of the site components of *procode* and *sitetret*.

**Figure 9.2 Proportion of acute trust HES records with no site identifier**

Derived from a 5% sample of 2002/2003 HES records.

1=no site identifier.



We took a 5% random sample (616 360 records) of the annual HES dataset for 2002/2003. A record was classified as having a valid site code (all had valid provider codes by virtue of HES data cleaning) if (a) it had a five-symbol *procode* with the last two symbols being alphanumeric and not 00, if (b) it had a five-symbol *sitetret* with the last two symbols being alphanumeric and not 00 or if (c) it had a three-symbol *procode* and a two-symbol alphanumeric *sitetret* that was not 00. Where a trust had no records with a valid site field by this classification we checked against the OCS February 2004 database to see if the trust had only a single site. If the trust was single-site we then counted all its records as having valid site identifiers. Our classification procedure will tend to understate the number of records with where the site is not correctly identified since it does not allow for the *procode* and *sitetret* to yield different but valid site codes.

The proportion of records in the sample without a site code was 13.23%. The distribution of the proportion was bimodal, with 125 of the 176 acute trusts in the HES sample had all records with a site code

and 17 had no records with valid site codes. Figure 9.2 shows the distribution of acute trusts by the proportion of their records with no site identifier.

The fact that the distribution is bimodal with most trusts having recorded sites for all episodes means that it should be possible to undertake analysis that requires site coding. However, allowance will have to be made for the fact that patients may also be choosing between trusts when they choose a site. One requires a set of trusts where sites are recorded and there are no bordering trusts with poorly recorded site fields. Thus, for example, analysis within central London is likely to be a problem with routine HES data since University College Hospital Trust (code RRV) had no HES records with site codes, although the OCS February 2004 list of NHS sites suggests that it has 14 sites, of which six appear to be hospitals.

### **9.2.3 Provider quality indicators**

Utilisation is not determined solely by distance so that measures of provider characteristics, such as waiting times for elective care and indicators of quality, are also required. It is possible to derive some of these from HES records. For example, it is possible to calculate waiting times for elective care, deaths in hospital within 30 days of surgery and re-admissions within 30 days. Such measures are, if the site field is recorded, available for the sites at which patients are treated.

Since the provider field (*procode*) is validated it is possible to link to other datasets at provider level to produce measures of other provider characteristics. Important examples are the Medical Workforce and Non-Medical Workforce Surveys ([www.publications.doh.gov.uk/public/work\\_workforce.htm](http://www.publications.doh.gov.uk/public/work_workforce.htm)) and the NHS financial information collated by CIPFA (CIPFA Health Information Service, Health Database 2003, version 16, [www.cipfastats.net](http://www.cipfastats.net)). However, such measures are not available at site level within providers.

### **9.2.4 Patient characteristics**

There are two patient identifiers in HES. The field for the new NHS number (*newnhsno*) would in principle be useful for linking to other NHS datasets. However the DQI shows that in 2001/2002 around 10% entries were invalid ([www.dh.gov.uk/assetRoot/04/06/71/97/04067197.xls](http://www.dh.gov.uk/assetRoot/04/06/71/97/04067197.xls)). It would be possible to link probabilistically using data on age, gender and patient postcode. There is also an internal HES identifier (*hesid*), derived from the NHS number, age, gender and postcode, which can be used to track admissions for the same patient within the same and other years.

The only information about the characteristics of an individual patient in HES is age, gender and ethnicity. The ethnicity field (*ethnos*) is based on patient-reported data and is generally poorly filled in.

According to the DQI for 2001/2002, which covers all types of NHS trust, the field had a valid entry in only 64% of records.

Given recent DH policy emphasis on ethnic monitoring following the Race Relations Amendment Act 2000, which came into force in April 2001, it might be expected that recording of ethnicity data had improved since 2001/2002. We examined the distribution of the *ethnos* field entries for the full set of 12 324 978 HES records 2002/2003. The results are given in Table 9.1. Notice that although new ethnicity codes were introduced in 2000/2001, in line with the new ethnicity classification in the 2001 Census, 11.24% of records were still classified with the codes in use up to 2000/2001. Nearly 32% of records do not identify the ethnic group of the patient, so that there appears to have been a small improvement since the 2001/2002 DQI.

**Table 9.1 Distribution of ethnicity field entries in 2002/2003 HES records**

<b><i>Ethnos</i> code</b>	<b>Ethnicity</b>	<b>Frequency</b>	<b>Percentage</b>
Old codes for use up to 2000/2001			
0	White	551 635	4.48
1	Black Caribbean	8949	0.07
2	Black African	3179	0.03
3	Black – other	2749	0.02
4	Indian	4595	0.04
5	Pakistani	3312	0.03
6	Bangladeshi	773	0.01
7	Chinese	702	0.01
8	Any other ethnic group	12 558	0.1
9	Not given	511 982	4.15
X	Not known	283 618	2.3
New codes for use from 2001/2002			
A	White	6 563 337	53.25
B	Irish	57 905	0.47
C	White other	428 162	3.47
D	White and Black Caribbean	14 441	0.12
E	White and Black African	7515	0.06
F	White and Asian	8692	0.07
G	Any other mixed background	16 573	0.13
H	Indian	142 079	1.15
J	Pakistani	144 404	1.17
K	Bangladeshi	44 196	0.36

L	Asian – other	46 355	0.38
M	Black Caribbean	81 352	0.66
N	Black African	74 413	0.6
P	Black – other	40 745	0.33
R	Chinese	16 246	0.13
S	Any other ethnic group	112 703	0.91
Z	Not stated	3 141 808	25.49
Total		12 324 978	100

If inadequate records are clustered in a small number of trusts it would be possible to use exclude them and still undertake an analysis on trusts with good-quality ethnicity data. Figure 9.3 shows the proportion of records in each acute trust with an *ethnos* field that does not give the ethnicity of the patient. Unlike the case with the inadequately coded site fields, no trust has zero errors and most have a substantial proportion of uninformative *ethnos* entries. Use of the *ethnos* field in HES to draw conclusions about the equity impact of service reconfigurations is at present a dubious option.

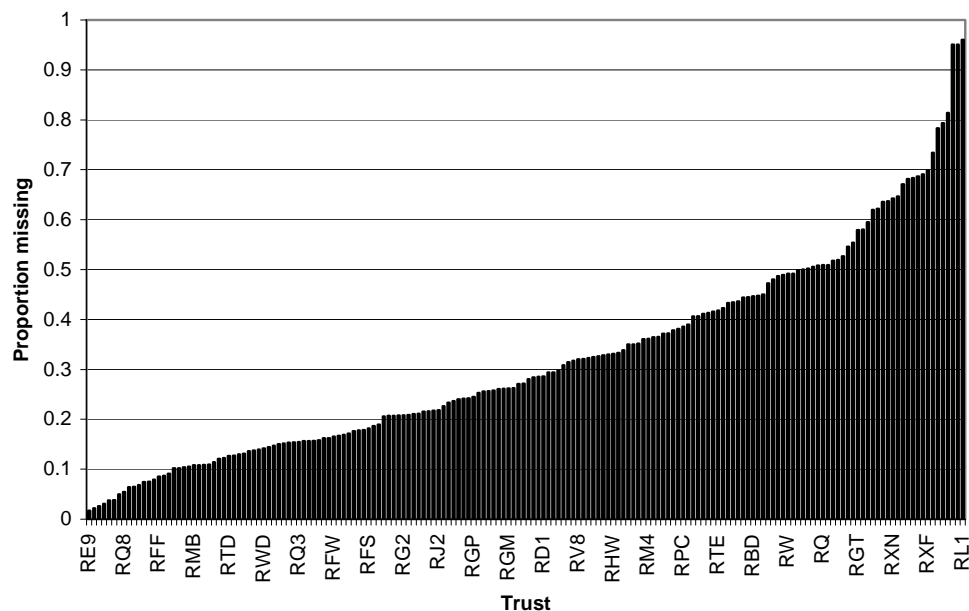
### 9.2.5 Linked socioeconomic data

Although HES is the only source of information about the individual episode of care and the individual patient, it is possible to link HES episodes with other datasets to attribute socioeconomic information aggregated to area level to the individual HES record. The most obvious example is the 2001 Census. HES has the full postcode of the patient (*homeadd*) which can be used to link to the 2001 Census at the Output Area level. Each Output Area contains around 125 households so that all the socioeconomic information in the census can be attributed to individual HES records at a low level of aggregation. For example, there is an ethnicity question in the census, so that the current poor quality of the *ethnos* field in HES is not a barrier to analysis of the equity implications of service configuration.

There is restricted access to the postcode field but analysis could also be conducted with the current electoral ward of the patient, which can be derived from two fields – *resladst* (local authority) and *currward* (ward code within local authority) – constructed from the postcode. The attributions of census data via electoral ward will be less accurate than with the HES postcode to Output Area link but some socioeconomic data not in the Census are available at ward level. The Neighbourhood Statistics section of the Office of National Statistics website contains measures of deprivation derived from social security at ward level. Neighbourhood Statistics also has estimates of average income for 1998/1999 in 1998 wards. Mortality data are also available at ward level.

**Figure 9.3 Proportion of acute trust HES records without ethnicity information**

Derived from a 5% sample of 2002/2003 HES records.



### 9.2.6 Practice characteristics

HES also has a field for general practice with which the patient is registered (*gpprac*). The field has restricted access but would enable characteristics of the practice (from the DH General Medical Statistics database) to be linked to the patient record. It is likely that practice characteristics (such as practice list size and measures of practice quality) affect overall utilisation and such things as practice location may influence the choice of site (Burns and Wholey, 1992). There are also practice-level measures of deprivation that can supplement the imputed measures of patient characteristics. The most useful is the Low Income Scheme Index derived from Prescription Pricing Authority data by the Prescribing Support Unit. The Low Income Scheme Index is based on the proportion of prescriptions for practice patients that are dispensed without charge on grounds of low income.

### 9.2.7 Distance

Once the site code is known the full site postcode is available from the Organisational Codes. The full patient postcode is available in *homeadd* so that it is then possible to determine the grid reference of both the site and the patient's home address. With this information

one can readily calculate the straight-line distance between them. It is also possible, though more laborious, to calculate journey times via road networks.

### **9.3 Summary**

Changes being introduced into postgraduate medical education and training are likely to increase flexibility and increase the availability of trainees in smaller DGHs. However, the same changes are expected to increase the proportion of time that consultants must devote to training. The combined impact on patient service is difficult to predict. New patterns for organising services to accommodate EWTD are still evolving. It is essential that the DH monitors how NHS trusts are changing service delivery in response to these fundamental changes in the training and working patterns of the medical labour force. Evidence available to date suggests that adjustments to service delivery will be at the specialty level. Individual trusts will be concentrating inpatient services in some specialties but will be able to maintain or further decentralise services in other specialties as the new 'generalist' consultants are appointed.

In this section we examined the data available to monitor these developments. The data currently available have a number of weaknesses, primarily with the inaccurate coding of ethnicity and the location of treatment within providers. However, these problems can be overcome. We conclude that it is possible to combine HES with other datasets to produce policy-relevant information, such as

- descriptions of the socioeconomic characteristics of patients using particular specialties at particular sites. However, the small but not trivial number of trusts with no adequate site recording means that this is not possible for a significant minority of sites;
- statistical models of utilisation to estimate the impact of distance, site quality and socioeconomic characteristics.

Data do permit useful information to be extracted about the access effects of reconfiguration of service delivery emerging from current policies.

### **9.4 References**

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## Section 10 Conclusions

### **10.1 Introduction**

This study examined the extent to which recent changes in postgraduate medical education and training guidance for junior doctors may be influencing the concentration of services available to patients. It was intended to update a review of training requirements undertaken in 1996 for a DH report on service concentration (Ferguson *et al.*, 1997). The policy concern was that changes in training curricula and experience requirements may lead to the concentration of junior doctors in larger hospitals. This could have an adverse impact on the access of patients to NHS services. Teaching hospitals have well-known responsibilities for medical education. However, DGHs provide training for junior doctors and junior doctors account for 50% of the medical workforce, so changes to the curricula and patterns in training could impact on the ability of the NHS to deliver patient care.

While the focus of this work was on curricula and training requirements, it was necessary to take account of major changes being introduced by the DH in the delivery of postgraduate training. Of particular significance was the creation in 2003 of the Postgraduate Medical Education and Training Board (PMETB) that will seek to better align postgraduate medical education and training with NHS service requirements. In 2003, the DH also made an important change to medical workforce planning with implications for the configuration of higher specialist training. And, as an ongoing process, the NHS needed to adjust the working patterns of junior doctors to meet requirements of the EWTD.

With so many changes taking place it was impossible to identify the impact of current policies on the interface between training and delivery of patient care. However, we do comment in the report on the direction of change.

Various research methods were used. They included literature searches, monitoring of policy announcements, analysis of training curricula and related documents, semi-structured interviews with representatives of Royal Colleges, regional postgraduate deaneries and other key bodies, medical staffing case studies, and quantitative analysis of routine DH datasets and a college manpower census.

Early in this study it was obvious that the specialty rather than the trust was the most important unit of analysis. Curricula and management of training are by specialty. Within a trust dependence on junior doctors to deliver services varies by specialty as do the problems of complying with EWTD. We employed two approaches to identification of key differences by specialty in the hospital workforce.

First, using national workforce census data we examined the difference by specialty in dependence on consultants, trainees and NCCG doctors. The last group is composed of doctors not in training programmes or posts. Second, we presented the results of case studies for two medium size trusts. The case studies confirmed how dependence on doctors in training varies by specialty within a single hospital.

## **10.2 Training curricula and guidance**

The central part of this study was an examination of the changes in curricula and training guidance that affect the role of junior doctors working in NHS trusts. Of the more than 55 hospital specialties recognised for higher training, we investigated developments in 22 of the largest specialties. The objective was to identify training guidance that contained recommendations with volume and concentration implications.

- (i) *Basic specialist training* The first part of postgraduate medical training includes the PRHO year (the first year) and SHO training (basic specialist training, BST, in the second, third or fourth years) of basic training. The delivery of training in these years will be fundamentally changed in 2005 when the Modernising Medical Careers programme is implemented. However, examination of the BST curricula and guidance found little evidence of indicative training requirements: clinical caseload benchmarks were identified in only three specialty groups (medicine, ophthalmology and A&E medicine). Moreover, requirements will probably be even more flexible under Modernising Medical Careers.
- (ii) *Higher specialist training* SpRs undertake further training leading to the award of a certificate of completion of specialist training (CCST). Once awarded a CCST a SpR may be appointed to a consultant post. In the past, training requirements for these doctors gave rise to most concern that they could lead to concentration. We supplemented our review of 22 specialties with analysis of guidance for key sub-specialties. Of the 44 curricula examined, only 10 specified indicative numbers of procedures or cases. The evidence suggested that greater flexibility was being introduced into curricula with the focus now on the acquisition of competencies.

## **10.3 Re-allocation of higher training opportunities**

In 2003/2004 the DH made a fundamental change to the way in which new higher training opportunities (NTNs) were allocated to hospital trusts via WDCs in different parts of England. Previous allocations had favoured teaching and large district hospitals, with a concentration in London. The new approach mimics the needs-weighted capitation formula used to allocate the NHS budget to PCTs. 'Fair shares' of

higher trainees in each specialty were estimated and areas with numbers furthest from a fair share were allocated a higher proportion of the available pool of new NTN. The new approach should, over time, contribute to a de-concentration of junior doctors.

### **10.4 Impact of reducing working hours**

Under the New Deal, first introduced in 1991, the NHS adopted measures to reduce the hours worked by junior doctors. Changes in working practices initiated under the New Deal were accelerated by the 1 August 2004 deadline for securing compliance with EWTD. In most specialties compliance involved moving to full shifts with between 8 and 10 doctors on a rota to maintain 24-hour cover. The fieldwork interviews included questions on how each specialty was adapting to comply with EWTD. The responses varied considerably by specialty. In A&E medicine, for example, compliance for basic training had been met years ago, whereas with general surgery, different ways of configuring services that did not reduce patient access were still being explored, including cross-cover for sub-specialties and so-called hospital-at-night medical/surgical teams. In those trusts with specialties facing particular difficulty in securing compliance, alternative options included employing more doctors, internal reorganisation of services or external reconfiguration. The latter include concentrating 24-hour cover on one site and maintaining outreach or outpatient clinics on other sites.

As the New Deal reduced the hours worked by junior doctors, hospitals needed to employ more doctors to meet patient service needs. A DH freeze on the number of SHO posts imposed in the late 1990s led to the creation of a market for junior doctors willing to be employed in hospital posts unrecognised for training. These are usually referred to as trust doctors. Over recent years this was the most rapidly growing group of doctors in the NHS, especially as the deadline approached for implementing the EWTD regulations. However, the introduction of the Modernising Medical Careers programme will re-integrate many of these doctors into the training regime. There will be financial consequences, as the funding for the posts has to be transferred from the trusts to the educational levy (see below), and steps were being taken to implement this re-mapping strategy during 2003/2004.

### **10.5 Financial incentives**

We attempted to identify how financial incentives to employ junior doctors are changing and the issues raised. The financial cost to trusts of employing junior doctors has undergone major change in recent years and further changes are under consideration. There is a national training budget for doctors in training. Until 2002 this educational levy paid 50% of the salary costs of SpRs and SHOs. From 2002 the levy paid 100% of SpR salary costs and from 1 August 2004 100% of SHO salary costs will come from the levy. Trusts pay the full salary cost of

trust doctors and other NCCGs. In 2002 a severe system of financial penalties (banding) was imposed on trusts related to failure to reduce the hours worked by junior doctors. This not only increased costs for trusts but also created perverse incentives for junior doctors. One consequence of this system is that, as trusts increase the number of doctors employed to become EWTD-compliant (that is, from six to seven on a rota), the marginal cost to the trust can be considerably below the actual employment cost of the extra doctor because of the savings achieved by the lower-band supplements paid to all doctors on the rota.

The DH has relaxed its controls on the total number of training posts, but on the condition that the additional posts are locally funded. This introduces new tensions between the PCTs, which may need to provide additional funding, and the trusts. The NHS is implementing a new financial regime, payment by results. As part of the reform of financial flows the DH wants to create a level playing field between trusts and plans to introduce adjustments that distinguish between the costs of service contribution and training incurred by trusts employing junior doctors. These DH plans have not yet been made public but could have significant effects on the incentives to provide training places.

## **10.6 Monitoring patient access**

The 1996 study on concentration examined the published literature on the relation between access and concentration of services. This is what the NHS Service Delivery and Organisation R&D Programme refers to as 'access-entry'. We reviewed the subsequent published literature and nothing suggested change to the evidence reported in 1997 (Ferguson *et al.*, 1997). Increasing distance to services does reduce utilisation but primarily for first contacts – that is, with GPs and outpatient clinics.

At present the changes in reconfiguration that are under consideration appear to be consistent with maintaining first-contact access. However, as so many changes are being introduced that affect the role of junior doctors in service delivery and organisation, it is not possible to say how they may eventually impact on access. This uncertainty increases the importance of monitoring developments as the NHS makes adjustments to the plethora of policy changes. We examined the scope for using routine NHS data to monitor changes in concentration of services by specialty. A major problem is the poor recording of information on the site of treatment. Whereas existing data permit analysis by age, the poor recording of information on ethnicity will make it particularly difficult to monitor the relation between concentration and this dimension of NHS utilisation.

## **10.7 Productivity**

It is important to quantify the effects of changing the mix of medical staffing on services delivered. Another objective of the present project was to examine the scope for using existing NHS datasets to explore the underlying relationships between the numbers of different types of staff and the output of care. What is important to measure is the effect on both health outcomes and the number of patients treated. At present the only measure of output generally available is the number of patients treated (approximated by the number of FCEs). Preliminary regression results show a positive and significant effect of consultants and training staff, suggesting a marginal productivity of approximately an additional 1000 FCEs per consultant and an additional 400 FCEs per training staff. The ordering of these effects is generally consistent across specialties.

## **10.8 Summing up**

From our review of curricula and guidance on postgraduate medical education and training we conclude that changes since 1996 are not leading to increased concentration of NHS services. If anything, developments over the past 7 years and current proposals for change suggest increased flexibility and scope for less concentration of junior doctors. While several specialties have yet to agree on how to adjust education programmes to the emerging working patterns of junior doctors, plans under consideration would not appear to encourage more concentration. Problems likely to emerge in the near future focus more on consultants. The new, more flexible, approach to training will require a larger input from consultants in supervision and assessment. Attempts to secure a wider geographic distribution of junior doctors will increase pressure on consultant time in areas that historically obtained relatively few trainees. At the individual trust level, the tension between employment of consultants to meet NHS targets such as elective waiting times and use of consultants to support increased trainees can be serious. There remains the question of when the EWTD will begin to be enforced for consultants.

## **10.9 Potential policy conflicts?**

A question raised several times during this research was the potential conflict between the policy of offering more patient choice and continued reliance on the NHS to provide training for doctors. If the DH restricts choice to hospital and consultant team, there would be few impediments to the wider use and availability of junior doctors. However, if patients are offered the choice of a named surgeon and prefer to be treated by a consultant rather than a trainee, there could be a serious conflict between service delivery and training of the next generation of doctors. At present it is unclear precisely what choices are to be offered to NHS patients but it is important that design of the

choice regime is informed by the importance of postgraduate medical education and training within the NHS.

It is also unclear how the new DH policy of payment by results will affect the ability and willingness of trusts to employ doctors in training. Changes to the training regimes outlined in this report should make it easier for smaller trusts to employ relatively more junior doctors than in the past. However, more trainees reduce the time of consultants available for patient treatment. As our preliminary analysis indicates, in some specialties the net impact on number of patients treated can be negative. Under the new financial-flows regime trusts have an incentive to maximise the number of patients treated from a given budget. The benefits of the new flexibility in postgraduate medical training, which should be to the relative benefit of smaller DGHs, may be diminished by the incentives generated by the new payment system.

### **10.10 Future research**

This report makes clear that major changes are being introduced into postgraduate medical education and training that can lead to less pressure to concentrate services than in the past. However, simultaneous change to working times and government policy initiatives such as patient choice and payment by results will affect the extent to which changes in training regimes will contribute to the wider policy of keeping services local. Priorities for new research should be given to monitoring the impact of this complex set of changes on organisations delivering health care. The research should be focused on the following two issues.

- Use of routine data to monitor changes in service delivery by site and specialty. As discussed in this report, a few key improvements in data collection by the DH would enable policy-makers to identify how access is changing early enough to consider adjusting policies that may be adversely affecting access.
- Incorporation of data on health outcomes in monitoring the effects of the emerging new system of postgraduate medical education and training. The impact of moving to shorter periods of training, new methods of assessment of competency, more generalist and fewer specialist consultants should not be judged by the change in consultant numbers but on the quality of care delivered by the reformed system. The DH is moving towards routine collection of data on health outcomes. Research on how best to use these data to examine the impact of the reforms to postgraduate medical education and training is of prime importance if the PMETB, now assuming responsibility for all aspects of training, is to judge and adjust policy to the benefit of patients.

Qualitative research methods can be valuable in developing an understanding of how and why individuals respond to new

circumstances in particular ways. However, when the need is to monitor how a complex set of policies is impacting on patient access, quantitative methods are likely to be more efficient. Comparison of trends between regions, size of trust, demographic and ethnic characteristics of patients and clinical condition, undertaken on an annual basis, will be essential if the PMETB is to effectively manage the integration of training with policies to enhance access.

### **10.11 Reference**

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**Addendum:**

This report was amended on 3<sup>rd</sup> October 2011 to update the correct copyright statement and/or correct the publication date. The content of the report has not been changed.