

The Surgical Workforce in the New NHS

A report prepared by The Royal College of Surgeons of England

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The British Orthopaedic Association

The British Association of Urological Surgeons

The British Association of Otorhinolaryngologists – Head and Neck Surgeons

The British Association of Oral and Maxillofacial Surgeons

The British Association of Plastic Surgeons

The Society of Cardiothoracic Surgeons of Great Britain and Ireland

The Society of British Neurological Surgeons

The British Association of Paediatric Surgeons

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Executive Summary	5
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PART A

1 Introduction	6
2 Background	7
3 The Current Situation	9
3.1 Demand for Services	9
3.2 Organisation of Services	10
3.3 Workforce Planning.....	12
3.4 The Paradox of Emergency Surgical Services	13
3.5 Day Surgery	14
3.6 Elective Inpatient Surgery	14
3.7 The Generalist vs. Specialist Debate	14
3.8 The Quality Agenda	14
3.9 Continuity of Care	16
3.10 Changes in Working Practices	16
3.11 Changes in Working Patterns	17
3.12 Academic Surgery.....	19
3.13 Education and Training Issues	19
3.14 Non-Consultant Career Grades	20
3.15 Locums	21
3.16 Changing Demands on Consultants' Time	21
4 What are the Targets for Surgery?	24
5 How May These Targets be Achieved?	25
5.1 Access.....	25
5.2 Process	25
5.3 Outcomes	25
5.4 The Organisation of Surgical Services	26
5.4.1 Grouping of Surgical Teams	27
5.4.2 Teamworking	28
5.5 Effective Workforce Planning Arrangements	28
5.6 The Infrastructure	30

PART B

The Nine Surgical Specialties	33
General Surgery	35
Trauma and Orthopaedic Surgery	37
Urology	40

Otolaryngology	42
Oral and Maxillofacial Surgery	43
Plastic Surgery	44
Cardiothoracic Surgery	45
Neurosurgery	46
Paediatric Surgery	47
References	49
Working Party Membership	52
Production Team.....	52
Evidence Received.....	52

Executive Summary

- This document springs from the desire of surgeons to deliver a safe, effective, high-quality service to surgical patients in the NHS.
- Representing the core data and opinions on workforce issues of The Royal College of Surgeons of England and the surgical specialty associations, this document is offered to clinicians, managers, planners and advisers to inform debate at all levels on the size, shape, environment and infrastructure necessary to deliver modern surgical services.
- The basic assumption is a commitment to a consultant-delivered service in line with the NHS Plan and the development of a multi-consultant team approach to patient care.
- It addresses the key issues of training, developing, planning, deploying and retaining the surgical workforce to support the objectives of the NHS Plan.
- The major deficiencies in workforce numbers and in the systems and infrastructure within which surgeons work are identified along with target points for action.
- Better outcomes and shorter waiting times will require more surgeons, nurses, allied professionals, beds, theatre time and a radical upgrading of information and data systems.
- There are serious issues of imbalance, recruitment/retention and career progression of training, non-training and academic grades in surgery, that require urgent, imaginative solutions.
- It is essential that surgical services are given much higher priority than is apparent in the NHS modernisation process.
- Little further progress can be made without significant extra funding targeted at surgical services and the surgical workforce.
- The evidence and expertise acquired at the ‘coal face’ of surgery, which is available from The Royal College of Surgeons of England and the surgical specialty associations, should be used to facilitate the modernisation processes.

1 Introduction

This document represents the core evidence on workforce issues of The Royal College of Surgeons of England and the nine surgical specialty associations.

The purpose of this document is to assist clinicians, NHS planners, managers and advisers to improve the quality of care for surgical patients by promoting high standards of surgical practice and training within the NHS.

Supporting the objectives at the heart of the NHS Plan,¹ it aims to address the way the surgical workforce is planned, trained, developed, deployed and retained.

Throughout the document is the explicit support of patients' expectations for, and the government's commitment to, a consultant-delivered service. Consultant surgeons should work in teams including other grades of doctors as well as nurses and allied health professionals (AHPs). A lead consultant and his/her consultant colleagues should carry the responsibilities for patient care. It is recognised that emergency and elective workload, case-mix and team structures vary from Trust to Trust and from specialty to specialty in surgery, and to a further degree in the subspecialties. The requirement for change therefore comprises generic and specialty-specific issues.

Unlike other medical specialties, surgery demands craft-based skills in the operating theatre in addition to the requirements, common to all hospital clinicians, for outpatient clinic and ward work, teaching, training, audit, research and continuing professional development (CPD). Surgical outcomes are more easily identified, risks are higher and there is less scope for delegation. Individual specialty on-call rotas are more onerous in surgery while in some other specialties there is more scope for cross-cover arrangements. The case seems clear for surgery to require special consideration within the workforce implications of the NHS Plan.

2 Background

Over the last three centuries, the UK has been at the leading edge of surgical discovery with surgeons being trained to the highest standards as set and monitored by our royal colleges and specialty associations.

The nine surgical specialties listed below were defined, for the purpose of the organisation of training, by the Joint Committee for Higher Surgical Training (JCHST) in 1966. They remain the framework for the provision of emergency services, but in elective work considerable further sub-specialisation has developed.

- General surgery
- Trauma and orthopaedics (T&O)
- Urology
- Otorhinolaryngology (ENT)
- Oral and maxillofacial surgery (OMFS)
- Plastic surgery
- Cardiothoracic surgery
- Neurosurgery
- Paediatric surgery

These are listed in order of current numbers of consultant surgeons in England. They have evolved in response to the need for specialisation in the UK and are paralleled across Europe and the developed world. Each specialty has developed at different times and at different rates, not least due to changing patterns of diseases and their treatments.

In the last two decades, demand in the UK has outstripped available capacity for the delivery of adequate surgical services.

Despite having considerable expertise and data, the surgical royal colleges and specialty associations have lacked the statutory authority to impose change or monitor quality, other than in training standards and to an extent in advising on consultant job descriptions and appointments. The opportunity now exists for the surgical profession to engage more effectively as partners with the government, NHS planners and managers in helping to implement the visions for the future embodied in the NHS Plan.

The Royal College of Surgeons of England, representing surgeons working in England and Wales, is keen to offer its considerable experience to those at national, regional and local levels who will determine the future surgical workforce.

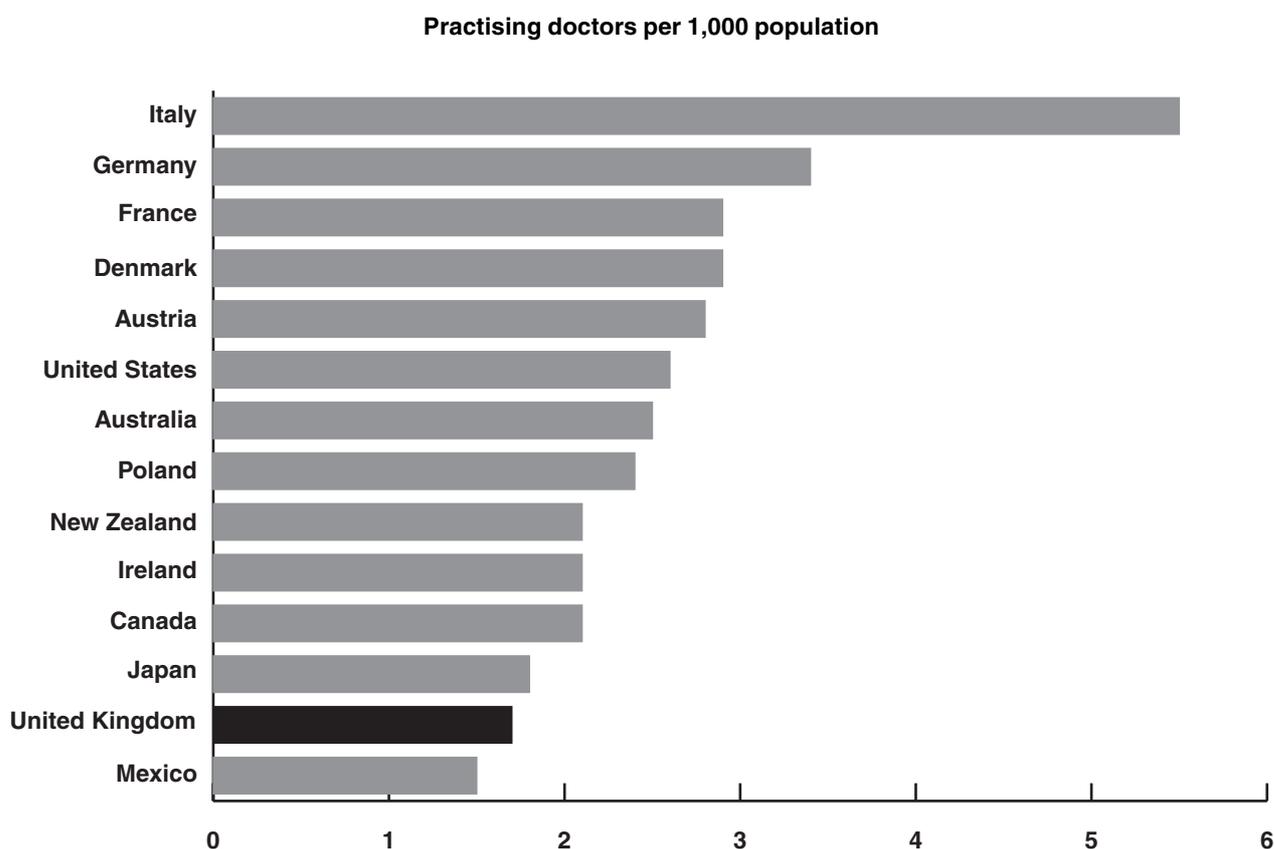
Surgeons have always questioned the work of other surgeons and the College has long been engaged in surgical research and comparative audit. The College welcomes the new structures that will make collection of outcome data, audit,

continuing professional development (CPD), appraisal and revalidation a contractual obligation for every surgeon. This will require extra contractual time for surgeons and will thus have workforce implications. We also recognise the need for major central funding directed at achieving outcome indicators.

It has long been recognised that many surgeons work isolated from their peers or in sub-optimal conditions and sometimes with inadequate support staff or facilities. It is also recognised that while the majority of surgeons work diligently and often well beyond their contracted hours, a few have performed or behaved below an acceptable standard.

There are fewer doctors per capita population in England and Wales than in most of the developed world (see Table 1 below).²

Table 1. Comparative national data on number of practising doctors in 1996. (OECD Health Data; 1997.)



This ratio applies not only to doctors in general but also to surgeons. Surgeons, however, do not work in complete isolation, so the need for an adequate number of surgeons must be supported by a full complement of nursing, clerical, secretarial and AHP staff. In addition, modern effective data collection systems, sufficient operating and ward facilities and an effective rolling programme of equipment replacement are required.

3 The Current Situation

3.1 DEMAND FOR SERVICES

Table 2 demonstrates a steady increase in demand for elective surgical services across most of the specialties. Comparison with Table 3 demonstrates the concurrent increases in elective, emergency and day-case surgery.

Table 2. Referrals and outpatient activity, England by specialty 1997/98-1999/00

Specialty	All referrals			Total attendances (new and old)		
	1997/98	1998/99	1999/00	1996/97	1997/98	1998/99
General	1,362,246	1,438,751	1,452,692	3,258,783	3,288,425	3,351,600
T&O	1,695,879	1,727,489	1,775,602	4,861,908	4,885,498	4,909,378
Urology	415,397	450,716	462,828	1,124,307	1,140,845	1,189,846
ENT	966,513	970,819	963,330	2,248,427	2,210,176	2,229,887
OMFS	452,089	453,826	450,142	1,163,730	1,163,385	1,117,581
Plastic	185,444	192,435	201,799	578,089	600,854	604,839
Cardiothoracic	43,576	41,471	42,926	128,144	127,535	127,511
Neuro	39,454	40,646	40,925	120,110	118,857	118,901
Paediatric	45,153	43,715	45,789	102,459	102,715	100,428

Referral and attendance figures do not include private patients, the number of which varies considerably between specialties and locations. 11% of the population have private health insurance, although this varies from 2% in the Northern region to 40% in the home counties. NHS statistics take no account of this demand.

Table 3. Elective, emergency and day-case FCEs, England by specialty 1996/97-1998/99

Specialty	Elective			Emergency			Day case		
	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99	1996/97	1997/98	1998/99
General	841,521	834,910	887,361	517,865	534,777	532,243	444,446	444,105	493,900
T&O	417,900	428,567	461,543	329,898	334,180	327,709	176,993	178,433	202,332
Urology	435,546	450,087	477,885	80,379	86,406	86,518	269,173	284,699	311,097
ENT	312,310	301,998	316,552	58,943	60,147	62,866	108,835	109,685	117,789
OMFS	184,262	174,166	187,396	17,290	18,102	18,099	133,341	126,947	143,126
Plastic	124,058	124,679	127,034	34,394	43,320	43,904	76,691	78,922	82,036
Cardiothoracic	47,476	50,319	49,086	10,142	10,935	10,609	2,952	3,085	2,458
Neuro	24,498	25,880	26,074	15,169	15,720	16,377	2,139	2,679	3,160
Paediatric	29,054	30,610	31,475	16,799	18,010	18,031	15,845	17,287	17,767

Finished consultant episodes (FCEs)

Tables 2 and 3 are derived from NHS Executive sources.

These show, in a two-year period, a 6% rise in aggregated elective activity, a 3.5% rise in emergency activity and a 12% rise in day cases. The apparent tailing off in emergency FCEs in year 3 is not explained.

It should be emphasised that these data under-record the multidisciplinary activity of many specialties, much of which is, by its complex nature, labour intensive.

Emergency surgical admissions have now risen from a rate of 3% per annum in the early 1990s to almost 30% per annum in some urban areas.³ At the same time, elective surgical admissions and day case admissions have risen dramatically in some specialties. In many acute hospitals, the majority of surgical inpatient admissions are now emergencies. Furthermore, the most significant rise in emergency surgical admissions is in the elderly who also stay in hospital longer. To cope with these demands, more consultant surgeons are needed.

The NHS Executive's own estimate of the number of additional whole-time equivalent (WTE) consultants required for England based on demand alone, is given in Table 4.

Table 4. NHS Executive projected cumulative requirements for additional consultants (WTE) in England, based on service demand alone. For headcount, a further 6% are required.

Specialty	2000	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10
General	1,258	56	108	166	228	280	335	392	451	501
T&O	1,148	67	135	208	288	351	415	483	552	590
Urology	365	22	45	70	96	120	145	172	200	227
ENT	422	22	44	68	94	114	136	158	180	194
OMFS	214	13	27	42	58	72	87	102	118	133
Plastic	173	12	24	37	51	63	76	89	103	115
Cardiothoracic	183	12	23	36	50	62	73	86	99	105
Neuro	129	5	10	16	22	27	32	37	42	46
Paediatric	99	2	3	5	6	8	9	11	12	14

Reproduced with kind permission of *NHS Executive Economic Adviser*. Please note that this table assumes continuation of historic trends in increased referrals of 3% per annum and in emergency and elective activity. The baseline figures are derived from the September 2000 Department of Health census*. These figures also assume a continuation of current work patterns including the use of non-consultants in outpatient and theatre work.

Every Trust is forced to cancel surgical activity owing to factors such as bed shortages throughout the year, not just in winter. Shortages of nursing staff and intensive care unit (ITU) or high dependency unit (HDU) bed shortages also lead to cancelled operations. **An increase in the consultant workforce alone will not address the shortfall in activity.**

3.2 ORGANISATION OF SERVICES

A survey² undertaken in 1998 of 154 acute hospitals (with urology services) in England and Wales demonstrated the following:

- 23 (15%) serve a population of less than 200,000;
- 51 (33%) serve a population of less than 250,000;
- 95 (62%) serve a population of less than 300,000; and
- only 16 (10%) serve a population over 500,000.

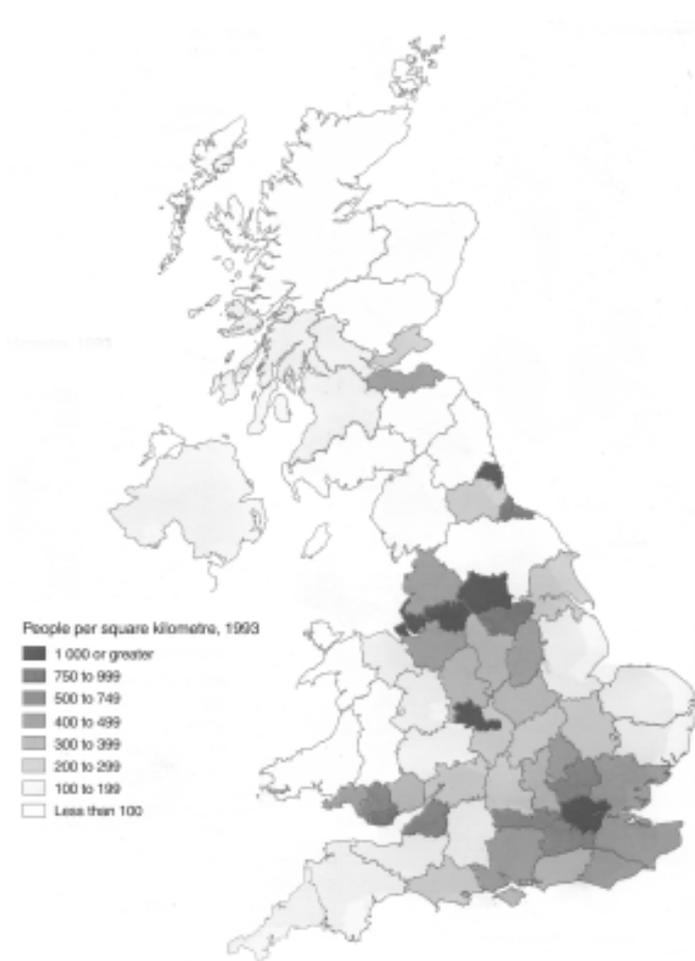


Figure 1. Population density 1993

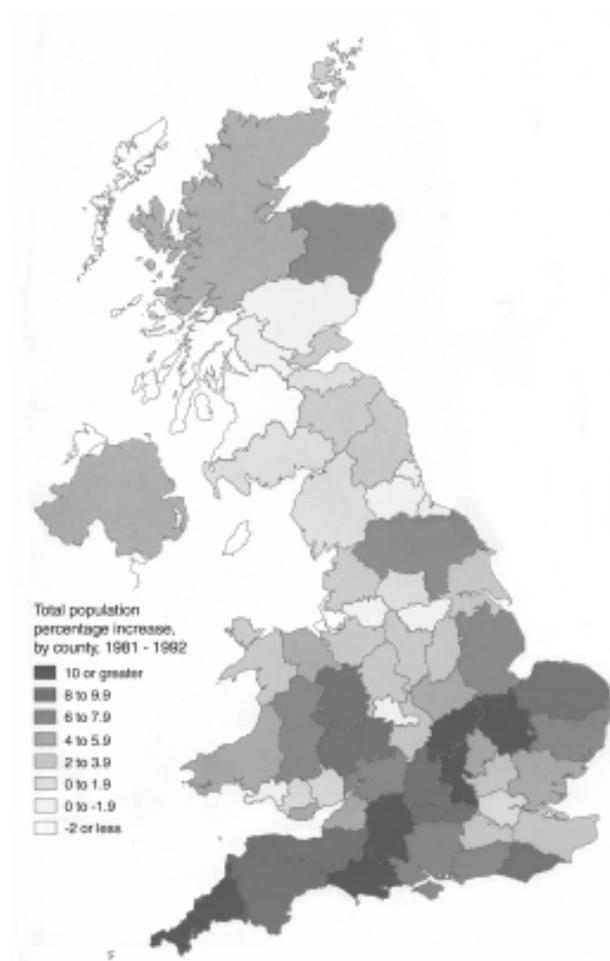


Figure 2. Change in population 1981-92

Ordnance Survey. *Statlas UK. Statistical Atlas of the United Kingdom*. (Ordnance Survey and HMSO: Southampton; 1995.)

Although there is a 20-fold difference in the population density between counties in England and Wales (East Anglia 167 people per km²; Greater London 4,400 people per km². *Office of Population Census and Surveys, 1993*⁴) which contributes to difficulties in gaining access to care in rural communities and the variability in catchment populations of district general hospitals (DGHs), there is much unnecessary duplication of resources in urban areas which the purchaser/provider split of 1990 did little to improve.

There is a need for clinical networks including the strategic consolidation of specialist services to provide acceptable quality of patient care and the best possible teaching and training environment.

The NHS Plan provides an opportunity to re-plan surgical and other services whereby service planning, financial planning and workforce planning will, for the first time, be closely linked. The intention to expand primary care delivery of

some surgical services should be fully discussed with the surgical royal colleges and specialty associations.

While specialty-specific recommendations are detailed in Part B of this document, we urge most strongly that NHS planners at all levels take full advantage of the evidence-based recommendations for surgical services already published. These are marked * in the list of references.^{2, 5-23, 39-43}

3.3 WORKFORCE PLANNING

Since 1995, planning for the future consultant workforce has been principally through the annual recommendations of the Specialty Workforce Advisory Group (SWAG). The SWAG process has involved annual consultations with the specialties and with the service through regional offices, taking into account factors such as training capacity, retirement profiles, the profession's estimates of required consultant expansion and the future demand for consultants as perceived by NHS managers. Nevertheless, its work has been hampered by:

- loose baseline data;
- the difficulty of projecting six years ahead;
- lack of central funding to sustain its recommendations; and
- competing demands from primary care on the senior house officer (SHO) pool.

Despite these difficulties, there has been a steady increase in training numbers, resulting in an increase of consultant numbers averaging at around 4% per annum, which is set to continue until 2009.²⁴

With the cessation of SWAG (March 2001), at a time when its value had become recognised, we are concerned that the National Workforce Development Board, supported by Care Group Workforce Teams and the Workforce Numbers Advisory Board at central level and the 24 new Workforce Development Confederations at sub-regional level, will lack the benefit of the surgery-specific intelligence that has supported the SWAG process in the past. We are also concerned that the overall projected increase in consultant numbers to 2009 (Table 7, page 29) are weighted significantly in favour of the non-surgical specialties integral to current NSFs and other central initiatives. We are equally concerned that the surgical workforce implications of the National Cancer Plan²⁶ have not been identified.

We are particularly concerned that the target numbers of surgeons to be achieved by 2002 transmitted to regional offices exceeds by over 100 the number of expected UK trainees. Had the earlier recommendations of SWAG been funded and implemented in 1996 and 1997, this shortfall would already have been met. These recently announced short-term targets can now only be met by recruitment from overseas or by the possible re-opening of transitional arrangements for non-consultant career grades (NCCGs), both of which carry risks of quality

control. Urgent debate is required to encourage senior surgeons to remain in their posts beyond the current average retirement age of 60. Freedom from on-call duties and enhanced pension arrangements may be required. We are concerned that of the 1,000 additional specialist registrars announced in the NHS Plan, only 300 will be funded in 2001/02, of which only 55 will be in the eight surgical specialties other than cardiothoracic surgery.

Surgical workforce planning must now include provision for the entire team required to sustain the activity of surgeons – nurses, nurse specialists, AHPs, clerical and secretarial staff, managers and other specialists such as anaesthetists, histopathologists, radiologists and oncologists.

For too long, surgeons have been expected to assimilate the added demands of teaching, training, research and audit, management roles and clinical governance at the same time as increasing throughput. Most surgical specialty associations now have guidelines relating to the numbers of patients that can safely be seen in the outpatient setting, where the requirements of adequate consultation, examination, informed consent, teaching, supervision of team members, data recording and communication can be met. Similarly, recommendations for the operative case-load have also been set. Planners are strongly recommended to consult these guidelines through the specialty association offices at The Royal College of Surgeons of England.

Likewise, there has been no manpower control of NCCGs which now number 30.8% of total consultant numbers. Unless this trend is reversed it will be impossible to achieve a consultant-delivered service with the highest standards of quality and safety.

3.4 THE PARADOX OF EMERGENCY SURGICAL SERVICES

Undoubtedly, patient survival and outcomes are improved by concentrating expertise into teams located at accessible centres. Trauma, emergency vascular surgical services and neonatal surgery are good examples. In many Trusts, however, vascular surgeons and others are unable to participate in general surgical on-call rotas, as they are fully engaged in their own subspecialty work.²⁵

Likewise, surgeons in other specialties with a remit for a particular subspecialty elective activity (eg joint revision, breast surgery, head and neck cancer and transplantation) may become de-skilled in the core, general emergency skills of their specialty (see also paragraph 3.7).

The problems of emergency surgery have been compounded by the loss of the old senior registrar grade. Formerly, senior registrars were experienced in the broad range of their surgical specialty and could handle the majority of out-of-hours emergency surgery. The post-Calman specialist registrar is less experienced. Also, less emergency surgery is now undertaken out of hours, largely as a result

of National Confidential Enquiry into Perioperative Deaths (NCEPOD) recommendations, and is conducted in dedicated emergency lists during daylight hours by consultants. Outcomes may have improved but at the cost of consultant time and operating theatre capacity for elective activity (see also paragraph 3.13).

3.5 DAY SURGERY

The increasing volume of day surgery has been welcomed by all. Although often technically less complex, consultant surgeons are expected to be involved in case selection and the conduct of day surgery. In many hospitals, there is an urgent need for increased day-stay capacity along with increased numbers of surgeons and nurses. Day surgery can provide important training opportunities for basic and other surgical trainees.

3.6 ELECTIVE INPATIENT SURGERY

Consultant surgeons usually have between two and four scheduled half-day operating lists per week for elective surgery. Most surgeons, especially those in their earlier years, would welcome more. The universal pressures to increase throughput militate against the time-consuming teaching of trainees whose operative experience has thereby declined. There is mounting pressure from trainees and consultants to have dedicated training theatre lists to properly equip the next generation of surgeons. Whole-day operating sessions are often more efficient than half-day sessions but require greater anaesthetic, nursing, ODA and ward cover. Reduced throughput of numbers of cases during training lists requires compensation by workforce expansion and enhanced facilities.

3.7 THE GENERALIST VS. SPECIALIST DEBATE

The increased trend towards specialisation within all branches of surgery has developed expertise and improved outcomes. There is a continuing role for the generalist, especially in smaller hospitals or in remote areas and a need for super-specialists to maintain the generalist skills needed for a quality emergency service. Training programmes and appraisal processes must recognise this need for a careful balance, otherwise there is a risk that the general aspects of each surgical specialty, however demanding or complex, will fall to NCCGs, the great majority of whom are not on the specialist register.

3.8 THE QUALITY AGENDA

Surgeons welcome the objectives embodied within the various strands of the NHS' Quality Agenda. To date, NSFs and the National Cancer Plan²⁶ have clear implications for surgeons and many more will follow. However urgent may be the current priority areas of mental health, cancer services, coronary heart disease, children's services and services for older people, **there are workforce imperatives across the whole of surgery that cannot be relegated to a slower timescale.** For example, 60% of cancers are treated primarily by surgery,

yet this is not reflected in the workforce strategies of the National Cancer Plan nor in the 2001-04 increase in trainees approved by ministers in March 2001.

The requirement for every surgeon to be involved in clinical governance, CPD, audit, appraisal and revalidation gives the opportunity for all to be equal to the demands placed upon them throughout their practising lives and for remedial measures to be available to those in need. The activities of the Commission for Health Improvement (CHI) will also address systems failures.

The requirement for consultants to be involved in the teaching, training and appraisal of basic and higher surgical trainees demands contractual time.

We support the announcement of managed continuing professional development strategies in the action document *Continuing Professional Development: Quality in the new NHS* (July 1999),²⁷ the provision of protected time ('service modernisation sessions') as part of the government's clinical governance programme announced as a key issue in *Assuring the Quality of Medical Practice* (January 2001, p.12, 3.3),²⁸ and look forward to the publication of the strategic framework for lifelong learning and appropriate supportive funding announced in *Investment and Reform for NHS Staff – Taking Forward the NHS Plan* (February 2001, p.38, 6.2-6.4).²⁴

The College fully supports these initiatives but is aware that all surgeons will require at least a weekly session allowed if they are to comply. The proposed quinquennial revalidation process alone, for example, will involve an average of 25 surgeons per week. A recent paper suggests that approximately 40% of a consultant's time is now taken up by non-clinical tasks.²⁹

Already, some surgical teams have identified a clinical governance lead, responsible at a local level for monitoring the surgical activity of members of the team. Two sessions per week have been identified for this activity for a six-surgeon colorectal team covering a 900,000 population in Trent. In cardiothoracic surgery, all consultants are now required to input their own operative and outcome data. This averages 20 minutes per case.

One established organisation, NCEPOD, has analysed the causes of avoidable postoperative deaths for over 10 years. NHS Trusts have taken NCEPOD's recommendations seriously. The latest report, for example, highlights the risks of unsupervised NCCG staff in some areas of surgery.³⁰ NCEPOD has emphasised the need for greater involvement of multidisciplinary teams and an increased need for higher dependency facilities to improve care for the older, sicker patients undergoing emergency surgery.

3.9 CONTINUITY OF CARE

One of the major adverse features of today's NHS is the sharp decline in the continuity of care of individual patients to the extent that it is often the exception for a patient to be seen on successive visits by the same person, or by the same staff on successive days in hospital.

Reasons include:

- Insufficient numbers of consultants.
- The need for consultants to be in a different room/department/hospital to cope with demand.
- Junior medical staff's timetables require compliance with hours of work regulations and in-hours educational activities away from the patient.
- The acute on chronic shortage of nursing staff whereby wards are staffed by temporary agency staff and nurses 'borrowed' from other wards. The underlying reasons are complex but important factors are:
 - As dedicated day-care facilities have developed, there is a greater proportion of higher dependency patients on surgical wards.
 - Lack of ITU and HDU facilities in general have increased the load intensity for nursing staff on surgical wards.
 - It is difficult to recruit newly trained nurses to surgical wards under this intense pressure.
- The changing working practices of all, whereby more people train and work flexibly and retire early.

Inevitably, the burden of delivering continuity of care falls increasingly on the consultant. The issues are serious and complex and require imaginative solutions centred around teamworking and skill mix initiatives but are ultimately dependent on increased numbers of staff.

3.10 CHANGES IN WORKING PRACTICES

There are already many examples in surgery where some of the traditional roles of surgeons have been effectively taken on by others.³⁸ Triage physiotherapists and nurses, nurse endoscopists and pre-admission clerking by nurses are a few widespread examples. Each surgical specialty has other examples. There is growing evidence, however, that the use of physiotherapists and nurse endoscopists actually increases waiting lists for surgery by exposing unmet needs.

Although there is scope for some of the repetitive service work of surgical pre-registration house officers (PRHOs) and SHOs to be undertaken by others, it must be recognised that extended nurse practitioners and nurse specialists perform different roles to trainee surgeons. The Royal College of Surgeons of England is actively engaged with the Royal College of Nursing, the National Association of Theatre Nurses and other groups to establish training pathways and recognition for these groups.

Examples of Trust initiatives²⁴ are the use of GP specialists in cystoscopy, endoscopy and surgical referral triage by Bradford South and West Primary Care Trust and the development of integrated care pathways involving measurable targets for those with cardiac chest pain, fractured hip and rectal bleeding at the Royal United Hospital Bath NHS Trust.

Whilst all such initiatives are directed toward more efficient patient-centred care, in surgery especially, adverse outcomes are most easily identifiable and **the consultant surgeon's ultimate responsibility for the entire care pathway is inescapable**. This must be supported by the properly resourced development of outcome indicators and systems of audit.

3.11 CHANGES IN WORKING PATTERNS

The last few years have seen significant changes in working patterns of all hospital doctors.

- 1 The New Deal and European Working Time Directive (EWTD) have imposed considerable restrictions on the working hours of junior staff. Availability of trainees is reduced by up to 22 weeks per year because of out-of-service commitments. This will worsen with the staged implementation of the Working Time Directive (WTD). Table 5 illustrates the sequential numbers of additional consultants in England required to fulfil the service workload of junior staff as the EWTD takes effect. The EWTD has applied

to consultants since 1998 but, to date, few have chosen to comply. New consultants trained in the culture of the EWTD will almost certainly wish to comply.

Table 5. NHS Executive projected cumulative requirements for additional consultants (WTE) in England based on WTD effect. For headcount, a further 6% are required.

Specialty	2000	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10
General	1258	18	36	54	98	143	188	232	277	280
T&O	1148	16	32	48	89	129	169	209	249	252
Urology	365	5	10	15	28	41	54	67	79	80
ENT	422	6	12	18	33	48	63	78	93	94
OMFS	214	8	15	23	37	51	64	78	92	93
Plastic	173	3	5	8	14	20	27	33	39	40
Cardiothoracic	183	3	5	8	15	21	28	35	41	42
Neuro	129	2	4	6	10	15	20	24	29	29
Paediatrics	99	1	3	4	8	11	15	18	22	22

Reproduced with kind permission of *NHS Executive Economic Adviser*. Please note that the table assumes that for each hour of working time lost by a specialist registrar or SHO, one additional hour of consultant time will be required. This hypothesis has not been tested. The baseline figures are derived from the September 2000 DH census.

- 2 More surgeons of both sexes are choosing to train flexibly. The likelihood is that, as in other professions and industries, the 'work/life ratio' will lead to increasing numbers of flexible, part-time and job-sharing consultant surgeons.³¹ Over 60% of medical graduates are now female with an increased likelihood of flexible working. This must be factored into workforce planning at all levels.
- 3 The trend to earlier retirement has been identified by most specialties. A general trend toward retirement at 60 or even earlier has shortened the average working life of a consultant by around 20% and can only be offset by a commensurate increase in numbers or reduced elective activity.
- 4 Multidisciplinary and teamworking practices provide huge benefits to patient care but are expensive in terms of consultant time compared to solo performance.
- 5 With the implementation of post-Calman specialist training, more consultant time is spent in formal teaching and training and on emergency and complex surgery formerly within the competence of senior registrars.
- 6 The explosion in numbers of surgical NCCGs has been the only solution for some Trusts to cover juniors' hours and/or less complex elective surgery. This has necessarily limited the expansion of the consultant grade. New solutions based on team structuring are required to regulate and maximise the role of NCCGs. Current numbers of NCCGs are detailed for each specialty in Part B.

3.12 ACADEMIC SURGERY

Academic departments of surgery are located within undergraduate and postgraduate medical schools and at other hospital Trusts linked to universities. Academic surgeons carry the triple burden of teaching/training, research and NHS service. Not only do they teach undergraduates and train postgraduates but carry out and supervise much of the research on which surgical progress depends. With an increasing number of medical students this teaching burden is set to increase considerably. Because of these responsibilities academic surgeons should only be expected to contribute to 0.5 WTE service work.

Inadequate funding for academic surgical departments and unreasonable expectations of achievement have led to a deepening recruitment and retention crisis in academic surgery, highlighted but not resolved by successive national reports. The latest draft report of the Council of Heads of Medical Schools identifies at least six professorial posts and 22 reader/senior lecturer posts in surgery that are unfilled. Of this total, 19 have been unfilled for over six months, nine have been kept vacant to save costs and seven have had no suitable applicants. This deteriorating situation is impeding the training of both undergraduates and trainee surgeons as well as research and development within surgery.

3.13 EDUCATION AND TRAINING ISSUES

Surgical specialist registrars are now offered structured training with a greater formal educational component. *Advanced Trauma Life Support (ATLS®)* courses are recommended and surgical skills courses are now mandatory for SHOs. This has been implemented during a period of more stringent working time regulations, leading to a cohort of new consultants, often less experienced in practical surgical craft than their predecessors. There is a worrying increase in litigation involving new consultants. The WTD has already impacted on training time, evidenced by worsening results in the intercollegiate examinations held towards the end of training. It is not an attractive option to increase the period of specialist training. Allowance must therefore be made for training and mentoring after the Certificate of Completion of Specialist Training (CCST) in the early consultant years.

The quality of education and training during working hours must be maximised as the WTD takes effect. Out-of-hours on-call work by trainees detracts from available training. Alternative ways of covering the service out of hours will need to be found.

It must be recognised that effective training requires educated trainers with sufficient time in clinics, wards and operating theatres to conduct this role. The reduction in service throughput must be recognised in the job plans and annual appraisals of trainers and in the arrangements for service delivery.

The basic surgical training programmes for SHOs require better management, infrastructure, organisation and personnel. Currently, there is an unacceptably wide variation in the quality of BST posts. Governance of these posts at regional level requires financial support.

The increasing numbers wishing to train flexibly must be recognised in timetabling and funding arrangements. The College is committed to increasing the numbers of female consultant surgeons, currently less than 10% of the total.

The increased numbers of specialist registrars (NTNs) recommended by SWAG in the mid-1990s were not supported by sufficiently increased medical and dental education levy (MADEL) funding. The increased numbers were consequently cut, resulting in the current shortfall of consultants.

The number of SHOs in surgery is approximately five times the number of SpR opportunities (Table 6).³² This is caused by the increase in SHOs necessary to achieve compliance with the New Deal in the early 1990s as well as the expected SpR increases not materialising. In surgery, cross-specialty cover has been implemented as far as it is safe to do so. Such arrangements often put unacceptable pressures on SHOs and their consultants.

Table 6. SHO/SpR ratios 2000/01³²

Specialty ^a	No of eligible SHOs	SpR vacancies	Ratio ^b
General	461	102	5:1
T&O	708	126	6:1
Urology	150	49	3:1
ENT	265	54	5:1
Plastic	156	17	9:1
Cardiothoracic	118	6	20:1
Neuro	77	0	77:0
Paediatric	44	10	4:1

Although most SHOs are on surgical rotations and may opt for a career in another surgical specialty, the overall imbalance is unacceptable.

^aOral and maxillofacial surgery has a different SHO pool.

^bThe ratios underestimate the competition for each SpR post from all sources.

3.14 NON-CONSULTANT CAREER GRADES

Across all specialties in medicine there has been substantial growth in NCCGs since the 10% (of consultant numbers) rule was lifted 10 years ago. In the West Midlands there are now 1,027 WTE NCCGs compared to 2,230 WTE consultants.³³ Nationally, NCCGs number 30.8% of the consultant workforce (Department of Health Census, 2000).

Despite the NHS Executive's good practice advisory document³⁴ of 1998, Trusts continue to advertise non-standard grades of NCCG. In the West Midlands alone, 39 different non-standard titles exist. There are 127 NCCGs with such titles out of a total of 1,027 in the West Midlands.³³ Such practices make a nonsense of data capture and workforce planning.

NCCGs comprise associate specialists, staff grades and large numbers of Trust doctors with varying titles. There is no central, regional or local control of their numbers. They are employed in surgery for two main reasons:

- 1 To deliver high volume surgical services.
- 2 To act as additional 'SHO' or 'registrar' staff to enable legal rotas.

The majority are overseas graduates although there is evidence that UK graduates are increasingly entering these grades.

Their current numbers in the surgical specialties represent an average 20% per annum expansion over the last three years. This is a conservative estimate bearing in mind the difficulties of identifying their numbers.

Those specialties with the greatest increase of NCCGs are those with the lowest consultant expansion. In oral and maxillofacial surgery there are now more NCCGs than consultants.

NCCGs are experiencing worsening job satisfaction. Many are very experienced and competent surgeons whose facilities and remit are being steadily downgraded. The RCS along with many sister colleges has set up a committee to explore ways by which NCCGs may be offered educational courses and CPD to support the appraisal and revalidation processes.

At a recent national meeting, surgical NCCGs expressed the overwhelming opinion that the entire grade should be phased out. With the new commitment to a consultant-delivered service, this may be one solution.

3.15 LOCUMS

Surgical departments frequently have to employ locum consultants, NCCGs and trainees. All locums not on the specialist register should work under the supervision of a substantive consultant in the same specialty.³⁷

3.16 CHANGING DEMANDS ON CONSULTANTS' TIME

Some have publicly expressed surprise that consultant surgeons operate on inpatients for a minority of their contracted time. However, most consultant surgeons exceed their contracted hours, often substantially.

Other traditional duties include:

- Emergency on-call (varies from 1 in 6 to 1 in 2 – 1 in 1 in certain cases)
- Outpatient clinics
- Ward rounds
- Day-case and ambulatory treatment
- Teaching
- Management/correspondence
- Travel between places of work

In recent years, further demands have included:

- Waiting list initiatives
- Calman-type training and teaching
- Formal regular appraisal of junior staff, including SHOs
- A raft of Trust initiatives:
 - risk management
 - directorate duties
 - costing and pricing
 - outreach clinics
 - multidisciplinary clinics
 - responding to formal complaints
 - audit
- The need to spend more time gaining informed patient consent.

Current additional duties now include:

- Clinical governance/service modernisation
- Mandatory CPD
- Appraisal
- Revalidation

- Peer review

The above lists apply to all surgeons. For some, extra duties may include:

At local level

- Lead clinician
- Clinical directorships
- Medical directorships
- Clinical tutorship
- Surgical tutorship
- Research

At national level

- Deanery, royal college duties
- British Medical Association duties
- Specialty association duties
- Examinerships
- Inspectorate team duties
- Royal college regional adviser/specialty adviserships,
- Membership of appointments committees for SpRs and consultants, etc.

All are legitimate duties necessarily performed by surgeons directly or indirectly in the pursuit of high standards of patient care and must be recognised by the allocation of fixed sessions in consultants' job plans.

There has been much debate on the possibility of recognising different stages in individual consultants' careers, but no formal process has been put in place.

4 | What are the Targets for Surgery?

- 1 Surgical services that provide an equitable, acceptable quality of access to care, process of care and outcomes. While never likely to be exactly equal, especially for those in isolated and rural areas, unacceptable differences currently exist within and between urban and rural areas.
- 2 The organisation of surgical services on a rational basis to provide optimum emergency and elective care through systems of managed clinical networks and supra-regional services. These should be based on adequate population size to give sufficient critical mass to develop expertise and avoid unnecessary and costly duplication of services. Inevitably, emergency surgical services will need to be centralised to enable tolerable rotas for consultants and trainees and to provide adequate training opportunities.
- 3 The grouping of surgical services and deployment of personnel within these systems of care to provide the appropriate expertise, quality and continuity of care throughout the patient journey. Studies show that where there is a choice, patients and their families place far greater importance on expertise than on immediate local availability of surgical services. However, reconfiguration must be based on evidence that existing systems are unsatisfactory.
- 4 The development of surgical teams and the culture of teamworking. The shape and size of surgical teams will differ from specialty to specialty and also according to locality, but will always include consultants, trainees, nurses and AHPs and will develop and maximise the skills of all.
- 5 The implementation of workforce planning arrangements that provide the right numbers of surgical staff at appropriate grades across the professions. These arrangements must take on board the requirements of elective and emergency surgical demand. They must be robust and flexible enough to respond quickly to, and anticipate changes in, central policy, demography, patterns of disease and regulations and trends governing working patterns.
- 6 An infrastructure that properly supports the delivery of surgical care, including adequate numbers of beds, theatres, day-surgery facilities, systematised data collection and monitoring, management, nursing, AHP, secretarial and clerical staff, all with the flexibility to adapt to changes in demand. Consultant expansion without substantial increases in beds, theatre sessions, nursing and support staff will not achieve significant improvement in the quantity or quality of surgical services.
- 7 Within this context there *must* be adequate anaesthetic, radiology and pathology services.

5 How May These Targets be Achieved?

5.1 ACCESS

- Identify and investigate the reasons for variation in waiting times and waiting lists. It is hoped that the new Confederations will recognise the reasons for differences in caseload and case-mix in their workforce planning role.
- Recognise the increasing demand for surgical services in local and national workforce planning.
- Amalgamation and networking of surgical services where there is inefficient local duplication. We would advocate a programme of systematised surgical service reviews that include professional surgical input.
- Enhance outreach services to more isolated communities.
- Anticipate changes in demand for surgical services owing to alterations in demography, disease and policy by using enhanced horizon scanning initiatives that can feed into the agendas of local Confederations and national Care Group Workforce Teams.
- Anticipate changes in surgical capacity that may result from generic factors such as the WTD, educational demands or changing patterns of working. Local factors could include the amalgamation/concentration of services, recruitment and retention issues and the effects of local medical schools.

5.2 PROCESS

- Identify the reasons for cancelled clinics and operating lists on a local level and address them.
- Identify and address the workforce implications and knock-on effects of national initiatives such as the National Cancer Plan.
- Ensure that initiatives based on the Health Improvement Plan (HImP) carry robust workforce and infrastructure recommendations.
- Build on examples of good practice in areas such as integrated care pathways and skill-mix practices.
- Install information systems and personnel that enable the collection and utilisation of comparable meaningful data to support a first-class surgical service.

5.3 OUTCOMES

- Recognise the need for, and implications of, developing robust outcome measures. These may be developed nationally and/or locally but demand the acceptance and

ownership of all surgeons. The resource implications are huge but essential for the practice of evidence-based surgery.

- NCEPOD is an outstanding example of how the above may be accomplished, whereby a relatively small organisation has produced significant improvements year on year. We fully support the initiatives of the National Institute for Clinical Effectiveness (NICE) but would wish to see greater resourcing of audit and the development of outcome indicators for surgery.
- We support the concept of annual appraisal and regular revalidation of surgeons which must lead to an improvement in the performance of the individual and teams.³⁵
- All individuals work within systems of healthcare. Poor outcomes are often the result of systems failures. We urge that this is recognised by the resourcing and monitoring of management, hospital systems and levels of infrastructure, at least as robustly as the performance of individual surgeons.
- Treatment of surgical patients must be based on the priorities of clinical need rather than waiting list targets.

5.4 ORGANISATION OF SURGICAL SERVICES

- The Royal College of Surgeons of England, the Senate of Surgery and the surgical specialist associations have produced a range of documents concerned with the organisation of emergency and elective surgical services; others deal primarily with workforce issues. They are listed in the references on pages 48-50.
- In compiling these reports, wide consultation has taken place with other related disciplines, managers, nursing groups and patient groups.
- All these reports contain evidence-based recommendations for change and are the responsible opinions of surgeons who treat patients and strive for the same objectives as the authors of the NHS Plan.
- Now is the time for partnership between The Royal College of Surgeons, the specialist associations and NHS planners and managers to evaluate and, where possible, implement many of the recommendations of those reports, most of which contain rigorous appraisal of workforce issues.
- There is professional consensus between surgeons and physicians that acute secondary care services should be predominantly based on networks delivering care to populations of approximately 500,000. This enables the essential clinical adjacencies between specialties to be maintained.
- A population size of 500,000 provides sufficient critical mass to achieve expertise across a range of specialties and to provide satisfactory training. It is large enough to allow the junior doctors' hours requirements to be met and to avoid duplication of

resources in most areas, but small enough to be reasonably accessible to all but isolated communities.

- This size of secondary-care system is applicable to most emergency and elective surgical services, although for some less common conditions a larger population base is required.
- It is a size that is meaningful for workforce planning, surgical team structuring and the development of care pathways, protocols and outcome measures.

5.4.1 Grouping of Surgical Teams

- Within healthcare delivery systems based on populations of approximately 500,000, there will be different requirements and configurations of the different surgical specialties.
- The location of cancer centres and cancer units already determines the presence of surgical oncologists from the various surgical specialties.
- The location of A&E departments determines the presence of those surgical disciplines most involved in emergency surgical and trauma services.
- Separate requirements exist for regional and sub-regional services such as paediatric, cardiothoracic, plastic and neurosurgery.
- It is considered that whatever the surgical service, networking and tertiary referral mechanisms can be devised that are appropriate to the needs of the local population, the needs of referring practitioners, the development of HImPs, the evolution of manageable audit and local workforce planning, if based around catchment populations of around 500,000.
- In considering the demands for numbers of generalist and (sub)specialist surgeons in such teams, the nine surgical specialist advisory committees (SACs) must ensure the gearing of training pathways to this requirement. While they are willing and able to do so, they require clear central guidance and support in terms of allocation of NTN with funding, to deliver the right numbers of trained surgeons through whatever replaces SWAG and MADEL.
- In their responses to the consultation document *A Health Service of all the Talents*,³⁶ the royal colleges and SWAG itself expressed concerns relating to the proposed loss of SWAG and MADEL, as they were considered essential to protect trainee numbers and funding to sustain the consultant workforce of the future.

5.4.2 Teamworking³⁷

- The evolution and culture of teamworking in surgery is essential for the future. The days of the isolated surgeon as regards attitude, behaviour or indeed in single-handed practice must end.
- Surgical teams must be led by a consultant and must take account of the service roles of its individual members, enabling support at all times.
- Cover arrangements for periods of absence must be robust.
- Care pathways and protocols must be in place where these have been shown to be effective.
- Recognition of non-clinical duties such as clinical governance lead roles, teaching, training, research and audit must take account of the skills and experience of team members.
- Not only should teams be structured around the skills of its members, but account should be taken of the common progression by consultants into non-clinical roles during their working life.
- Surgical teams must maximise the potentials of its doctors, nurses, AHPs, managers and clerical staff, ensuring continuing professional development for all.^{27,38}
- Trainees must be given quality structured education and hands-on experience. These processes should continue to be monitored by the royal colleges and postgraduate deans.
- The roles of NCCG staff must be clearly defined. They should be appointed only to recognised grades.³⁴
- Mentoring/pastoral care arrangements should be in place for all team members, particularly for surgeons in their first few years and toward the end of their careers.
- Adequate time must be allowed in consultant contracts to engage in these team activities and arrangements made to cover the lost service commitment that this implies.²⁸

5.5 EFFECTIVE WORKFORCE PLANNING ARRANGEMENTS

- We note the new planning arrangements proposed in *A Health Service of all the Talents*³⁶ and announced in *Investment and Reform for NHS Staff – Taking Forward the NHS Plan*.²⁴
- In particular, we note the links between the work of health authorities and Confederations and between the National Workforce Development Board and the Workforce Numbers Advisory Board.

- We are concerned that there must be adequate surgical professional input at all levels in these new arrangements but recognise that this has not been formalised.
- Table 7 illustrates the College/Senate of Surgery targets and the actual increases expected by 2009.

Table 7. Consultant targets and population ratios (England)

Specialty	1999 baseline (England and Wales)	Senate of Surgery target (England only)	Target ratio	2009 SWAG projection accepted by ministers (England only)
General	1,346	2,080	1:25,000	1,919
T&O	1,208	2,080	1:25,000	1,741
Urology	442	650	1:80,000	613
ENT	459	693	1:75,000	502
OMFS	265	346	1:150,000	287
Plastic	197	520	1:100,000	286
Cardiothoracic	189	286	1:182,000	300
Neuro	143	208	1:250,000	202
Paediatric	100	173	1:300,000	130

The 1999 baseline figures are headcount for England and Wales, agreed between the specialties and SWAG. The projected numbers for 2009 assume that the SWAG recommendations for 2001-04 are implemented. They apply to England alone. The figures are based on a population of 52million for England. No account is taken of possible recruitment/retention initiatives.

- We recognise that this does not represent a significant increase in expansion rate in most specialties other than cardiothoracic surgery, which has received an impetus from the national service framework on coronary heart disease.
- Every consultant surgeon requires adequate support staff and facilities as outlined in section 5.6 below. A model should be established to assess the resource implications.
- Consultant workforce planning must be accompanied by commensurate protected funding for the right number of surgical trainees.
- The SHO grade and early years after qualification must be revisited to ensure proper numbers of SHOs with expectations of fulfilling career aspirations and the introduction of flexible career pathways.
- The current serious imbalance between the number of SHOs in the surgical specialties and the career opportunities available could be exacerbated when the increased output of UK medical schools takes effect in 2004/05. It is hoped that many more surgical PRHOs will then be appointed, alleviating the pressures on hours of work for SHOs.

- The numbers of NCCGs has had no control since the 10% limit was lifted. There are now 10,500 NCCGs overall, at least 1,500 in the surgical specialties. This has produced a serious situation in surgery whereby there is an increasing cohort of NCCGs of varying ability undertaking tasks of varying complexity.
- Order must be restored to the NCCG grade whereby their role must be identified, their career opportunities developed and their numbers planned as for all other grades.

5.6 THE INFRASTRUCTURE

- We welcome the current plans for investment in additional surgical facilities announced by the secretary of state on 15 February 2001.
- However, it must be realised that increased facilities need to be matched by an increase in staff at all levels and must be planned to function with existing or re-shaped surgical team structures, not in isolation.
- Many surgeons today consult and operate in outdated conditions, which are sometimes unsafe.
- The capacity for safe surgery is frequently limited by lack of operating time, lack of HDU/ITU beds, shortages of skilled nursing staff, lack of elective surgical beds and lack of adequate equipment.
- While acknowledging the existence of unused capacity in the private sector, for the NHS to use this for short-term waiting list improvements is a more expensive option than to invest in its own infrastructure.
- Most surgeons recognise that inadequate information systems exist in most NHS hospitals. Historically, they have been allowed to develop disparately, Trust by Trust.
- There is an urgent need to develop and install a unified system across the NHS that can be accessed by individual surgeons at the point of patient contact in the outpatient department, the ward and the operating theatre. Collection and maintenance of data need to be located close to the points at which data are generated.
- Such a facility, adequately supported by IT staff under the direct control of the surgical team is essential for activity data collection, both of the organisation and the individual, for comparative audit, for training and for the entire raft of quality control issues.
- We welcome the initiatives to recruit and retain nursing staff that have to date attracted 7,000 nurses to return to the NHS; we welcome also the associated housing and childcare initiatives.
- We recognise and fully support the need for additional expenditure on nurse training but equally recognise the need to protect funding for the training of adequate numbers

of specialist doctors. With the merging of MADEL and non-medical education and training (NMET) budgets, there is the potential risk that meeting priorities for one group could disadvantage the other on a patchy regional basis.

- We consider there is an urgent need to enhance medical secretarial services. The recruitment and retention of individuals with the skills and qualities required to support surgical teams, releasing surgeons from many inappropriate tasks in this area, demands a review of secretarial career and pay structures.

The Surgical Workforce in the New NHS

Part B

The Nine Surgical Specialties

For each specialty the following information is given:

- current consultant numbers in England derived from the Department of Health census September 2000;
- Senate of Surgery (1999) targets (England) – these represent the corporate view of the surgical royal colleges and specialty associations;
- current shortfall on Senate of Surgery target (England);
- estimated numbers by 2009 (SWAG March 2001 – without overseas recruitment);
- estimated 2009 shortfall on Senate of Surgery target (England);
- NHS Executive workforce statisticians' projections of additional numbers required in 2001 and 2009 (England) based on the cumulative increase in demand for consultants, which derives from:
 - waiting times, demography, spare capacity (given separately in Table 4);
 - WTD effect;
 - medical advances/productivity;
 - public expectations;
 - skill-mix; and
 - NSFs and other service developments.

These have been weighted according to the quality of data. They have been converted from WTE into headcount using current ratios for each specialty. As such, they should be regarded as indicative rather than absolute. They are based on the September 2000 Department of Health census.

- historic expansion rate;
- agreed future expansion rate (SWAG recommendations);
- current and projected numbers of trainees. **Note: except where stated, the 2000 figures are NTN for England whereas the 2004 figures are for England and Wales. These figures assume conversion of visitor training numbers (VTNs) and in many cases will represent a reduction in the numbers of trainees in England.**
- specialty specific workforce and service issues.

NB

Please note that all consultant figures given are for headcount, England only.

The following figures do not include possible overseas or other recruitment initiatives.

Note also that the figures assume no time gap between achieving a CCST and appointment to the consultant grade and no increase in 'wastage' factors as surgeons increasingly choose to train and work flexibly as described in paragraph 3.11, Part A.

Comment

In all nine surgical specialties there is a considerable shortfall of 1,454 surgeons between the consultant numbers required by 2009 (NHSE projection) and the numbers due to finish training by 2009.

Also, the cumulative numbers due to finish training by 2009 are 726 fewer than the Senate of Surgery targets of 1999.

The inescapable conclusion is that many more trainees are required as soon as possible and more consultants will be required to train them.

GENERAL SURGERY

	DH/NHSE data	Specialty data
Current consultant numbers (1:40,000)	1,331	1,306 in post
Senate of Surgery target (1:25,000)	2,080	(+29 locums and
Current shortfall on Senate target	749	9 vacancies)
Estimated numbers by 2009	1,919	
Estimated 2009 shortfall on Senate target	161	
NHSE statisticians' 2001 requirement	1,410	
NHSE statisticians' 2009 requirement	2,165	
	(likely shortfall of 246)	
Historic expansion rate	4.4%	
Agreed SWAG expansion rate 1999-2009	5.1%	
NTNs (England) 2000	736	(890 SHOs)
NTNs (England and Wales) 2004	822	

The 1999 Senate of Surgery target is 1 per 25,000. There are currently 64 additional posts for England that are funded and a further 123 being planned. Of the last 114 appointees to consultant posts, 22 moved from other consultant posts. Around 60 advertised consultant posts cannot be filled. Some 50 others are filled by locums. Of the unfilled posts, 18 are in breast surgery, 12 in colorectal surgery, 11 in general surgery, 10 in vascular surgery, five in upper gastrointestinal surgery and at least 10 in transplantation.

All general surgeons are trained in the generality of surgery and receive training in the subspecialty of their choice in the last two years. Surgery in general provides a common training stem servicing the specialties of vascular surgery, breast surgery, endocrine surgery, colorectal surgery and upper gastrointestinal surgery.

It is increasingly difficult to undertake general surgery in an era when specialisation is demanded by patients. It is not possible to estimate how long 'general surgery' as a speciality will continue, although surgeons may, while on duty for emergencies, undertake procedures outside their specialty. In larger hospitals in the UK there is a separate vascular rota often combined with adjacent hospitals, and in some hospitals there are even separate other-specialty rotas. With the specific nature of breast and transplant surgery, more and more surgeons specialising in these areas find that they are less able to undertake the full range of emergency surgery. Consequently, their place on the rota has to be filled by other surgeons. In some parts of the country, surgeons may well be on both an emergency rota for the hospital and a specialty rota covering a group of hospitals. Until larger hospital confederations are achieved such a situation will arise and will adversely affect the life of the general surgeon. From recent surveys undertaken by the Association of Surgeons, the mean projected retirement age is 61, thus the average duration of a consultant's working life is approximately 25 years from appointment around the age of 36.

Two-thirds of consultants work in a district general hospital, a third work in teaching hospitals either in an academic position (10%) or as an NHS consultant in a teaching hospital (23%) while 1% work in the armed forces. Clinical interests and commitments are changing: 58% of consultants name one current specialty as their major interest, while 26% name two and 10% name three. Only 33% of surgeons report that surgery in general is one of their current primary clinical interests. 30% report colorectal surgery, 24% vascular surgery and 20% breast surgery as being their current primary and major interest.

With increasing specialisation this trend is changing rapidly, with the result that fewer exclusively general surgeons are being appointed. Laparoscopic, vascular, upper gastrointestinal and colorectal surgery are becoming more popular, whereas breast and transplantation surgery are now in a recruitment crisis.

Half of consultant general surgeons have management roles that detract from their clinical commitments. The clinical workload of surgeons remains high with the mean number of clinical notional half-days reported as 8.8, while the majority of consultants work between 9 and 11 clinical notional half-days per week. Some 77% undertake between 6 and 8 fixed commitments per week with 26% of surgeons working more than 7 fixed commitments per week. These fixed commitments do not include the on-call rota which remains a heavy burden with the median on-call rota being 1:5 with cover of colleagues for holidays and study leave.

There are now over 400 NCCGs in general surgery with at least 100 being appointed in the last three years. Such appointments are permanent and in many hospitals will detract from appointing fully-trained consultant surgeons in the future. In turn this is likely to make training more difficult because NCCGs undertake many of the training procedures yet do not train specialist registrars.

The cancer referral guidelines require an increase of 0-50% of staff, without which up to 50% of outpatient demand from other patients cannot be met.

It is suggested that an ideal surgical team when consultant expansion is complete has one specialist registrar for every four to five consultants with one senior house officer and two or three pre-registration house officers.

The pressures upon the consultant for time dedicated to emergency surgery, clinical governance, management and training make the case for a continued increase in consultant numbers. Nevertheless, a careful balance between workload responsibilities and number of consultants must be formulated to ensure that those consultants undertaking clinical work remain highly skilled to provide the surgical outcomes which patients expect. The service cannot be managed without proper outcome data and accurate numbers related to requirements for surgery and waiting list times.

TRAUMA AND ORTHOPAEDIC SURGERY

			DH/NHSE data
Current consultant numbers (1:44,500)			1,199
Senate of Surgery target (1:25,000)			2,080
Current shortfall on Senate target			881
Estimated numbers by 2009			1,741
Estimated 2009 shortfall on Senate target			339
NHSE statisticians' 2001 requirement			1,290
NHSE statisticians' 2009 requirement			2,075
			(likely shortfall of 334)
Historic expansion rate			5.9%
Agreed SWAG expansion rate 1999-2009			5.2%
NTNs (UK) 2000	777	(956 SHOs)	
NTNs (UK) 2004	817		
Specialty association/SAC data			
Current consultant numbers	(1:40,600)		1,205
Senate of Surgery target	(1:25,000)		1,955
Current shortfall			750
Estimated numbers by 2009	(4.6% expansion)		1,806
Estimated numbers by 2009	(5.2% expansion)		1,902
Estimated shortfall	(4.6% expansion)		149
Estimated shortfall	(5.2% expansion)		53
NHSE statisticians' 2001 requirement			1,290
NHSE statisticians' 2009 requirement			2,075
Historic expansion rate	(over 10 years)		4.6%
Historic expansion rate	(over last 2 years)		4.9%

The number of SpRs in 2001 for England is 614 (including an additional 10 new posts but excluding those in research (39) and unused (3)).

Currently there are 26 fixed training numbers (FTNs) which it has been suggested should be converted to NTN's by 2004. The projected number of NTN's for England by 2004 is, therefore, 640 (excluding 39 in research and three unused).

At present there are sufficient SpRs in the system to sustain an expansion rate of about 4.5%.

There is a planned increase in SpRs and we may not be able to implement this unless we have sufficient consultants to train them. In addition, any planned increase has no effect on consultant numbers for six years (minimum training period).

If we assume the NHS Executive statistician's figure of 2,075 as being the requirement for consultants in 2009, then an expansion rate of 4.6% will give a shortfall of 269, whereas a 5.2% expansion rate will give a shortfall of 173. The

target total of 1,955 based on a consultant to population ratio of 1:25,000 gives estimated shortfalls of 149 and 53 for expansion rates of 4.6% and 5.2%, respectively. It is likely, therefore, that there will be a substantial shortfall in the number of consultants that the NHS Executive demand analysis suggests is required by 2009.

There is an increasing trend towards subspecialisation in areas such as spinal, joint replacement, joint revision, hip, knee, shoulder and paediatric orthopaedic surgery. It is becoming increasingly difficult to conduct elective and emergency paediatric orthopaedic surgery in a DGH setting largely because of the requirements of paediatric anaesthesia.

Progressively fewer orthopaedic surgeons engage in trauma surgery, particularly in their senior years.

Teamworking in orthopaedics is relatively well advanced, involving surgeons of various subspecialty interests as well as physiotherapists, technicians and specialist nurses. Because of the diversity in orthopaedics, teams are necessarily large and more difficult to achieve in the smaller hospital setting.

With the increasing longevity of the population, there is an increasing demand for joint replacement and revision which is likely to continue.

Largely owing to consultant vacancies and long waiting lists, the number of NCCGs has risen by 12.5% per annum over the last three years to 501 and is now at saturation point. The accepted ratio of middle grade staff to consultants will be exceeded if more NCCGs are appointed without commensurate consultant expansion.

The average age of retiring consultants is now 59.5, requiring 40 replacements each year.

There is a growing trend towards the conduct of trauma surgery by more senior staff in daylight hours following NCEPOD reports. This trend, however welcome, impacts on the resources available for elective orthopaedics, resulting in often unacceptably long waiting lists in the specialty.

Despite the trend towards subspecialisation, over 80% of orthopaedic surgeons are involved in both trauma management and general orthopaedics. The SAC in trauma and orthopaedics insists on training in the generality of the specialty for the first four years of the six-year training programme and consultant supervision for daylight trauma lists. This should ensure a safe trauma service for the future.

Of 88 unfilled advertised consultant posts in February 2001, 72% had been unfilled for three months and 25% for over two years.

The trauma workload is associated with a high (80%) translation rate (those admissions requiring surgery). Elective orthopaedic clinics have a 40% translation rate. Waiting lists are also high, there being approximately 240,000 waiting for inpatient treatment at any one time.

For a population of 500,000 the team structure should be:

20 consultants;
10 SpRs; and
10 SHOs.

Plus any additional numbers of non-training grades of doctors or nurses or other specialist practitioners to provide a quality service that does not impinge on training requirements.

Although the level of musculoskeletal oncology is low, this is increasing due to the rising number of patients with bone metastases in patients surviving primary oncology treatment at other sites.

Frameworks of care for complex trauma and revision hip procedures are being developed that will require additional manpower.

The specialty supports one fixed session for each consultant for clinical governance/service modernisation, which translates into a requirement for a further 160 consultants for England.

UROLOGY

	DH/NHSE data	Specialty data
Current consultant numbers (England) (1:119,000)	382	438 (1:114,000)
Senate of Surgery target (1:80,000)	650	650
Current shortfall on Senate target	268	212
Estimated numbers by 2009	613	620
Estimated 2009 shortfall on Senate target	37	25
NHSE statisticians' 2001 requirement	410	
NHSE statisticians' 2009 requirement	703	
	(likely shortfall of 90)	
Historic expansion rate	7.6%	6.7%
Agreed SWAG expansion rate 1999-2009	4.7%	
NTNs (England) 2000	210	(199 SHOs)
NTNs (England and Wales) 2004	216	

Of the five additional training places announced for 2001/02, four are reserved for transplantation, thus reducing the 2009 estimated number of urologists.

With the exception of Ireland the number of urologists to population ratio is lower in the UK than in any other EU country. The Senate target ratio of 1:80,000 is still lower than all other EU countries except Ireland. The specialty is overburdened.

Many examples of initiatives such as single visit haematuria clinics, prostate assessment clinics, andrology clinics and nurse-led follow-up clinics have helped to improve services.

About half of urologists have a major interest in oncology. Most have at least one subspecialty interest. There is a considerable unmet need in PSA screening, prostatic symptoms and female incontinence.

The National Cancer Plan and referral guidelines are posing considerable service pressures. This factor and other increasing service demands suggest that there should be one urologist per 100,000 population (currently 1:119,000) by 2003 and one per 80,000 by 2007. If the SWAG projections materialise, this ratio should be achieved by 2009.

Around 30 consultant posts have been difficult to fill and additionally the same number have been converted to NCCG posts. There are 20 single-handed urologists.

For a population of 500,000 the ideal team would comprise:

six consultants (with a range of special interests);
three to four SpRs; and
NCCG support for non-operative roles.

There is much scope for interdisciplinary working.

The British Association of Urological Surgeons recommends the following safe workload maxima:

Outpatients

Consultant alone	14-20 per clinic
Consultant with SpR or NCCG	20-30 per clinic
Consultant with SHO or first year SpR	25 per clinic

Inpatients

1,000-1,250 FCEs per year with at least 60% as day cases.

The specialty feels that each urologist requires one session for clinical governance/ service modernisation and that an additional session for the clinical governance lead of a team is desirable.

OTOLARYNGOLOGY

		DH/NHSE data
Current consultant numbers (England) (1:113,000)		448
Senate of Surgery target (1:75,000)		693
Current shortfall on Senate target		245
Estimated numbers by 2009		502
Estimated 2009 shortfall on Senate target		191
NHSE statisticians' 2001 requirement		476
NHSE statisticians' 2009 requirement		745
		(likely shortfall of 243)
Historic expansion rate		1.3%
Agreed SWAG expansion rate 1999-2009		1.6%
NTNs (England) 2000	188	(361 SHOs)
NTNs (England and Wales) 2004	213	

This specialty has seen an extremely low historical expansion rate of consultants and an extremely high expansion rate of NCCGs, now numbering 225.

During a six-month period in 2000, 37 consultant posts and 25 long-term locum posts were advertised. For many of these there was only one applicant, there being a current shortage of CCST holders. There are seven single-handed consultants.

Cancer referral guidelines, especially indicating the need for referral of cases of hoarseness of voice have led to extreme pressures.

30% of ENT surgery is paediatric.

There is a trend towards subspecialisation and involvement in interdisciplinary working with other specialties. Specialist nurses and audiologists are already widely used.

Although a proportion of otolaryngological management has become non-surgical, this has not reduced the need for consultants. Current workload in many locations greatly exceeds average caseload recommendations.

The specialty has provided detailed information which indicates that the 2009 targets will not be met unless the numbers in training are increased. In the shorter term the 2004 interim targets cannot be met without importing CCST holders from Europe, incorporating more mediated entrants, accelerating training or using all three strategies.

ORAL AND MAXILLOFACIAL SURGERY

		DH/NHSE data
Current consultant numbers (England) (1:215,000)		243
Senate of Surgery target (1:150,000)		346
Current shortfall on Senate target		103
Estimated numbers by 2009		287
Estimated 2009 shortfall on Senate target		59
NHSE statisticians' 2001 requirement		267
NHSE statisticians' 2009 requirement		499
		(likely shortfall of 212)
Historic expansion rate		1.6%
Agreed SWAG expansion rate 1999-2009		1.5%
NTNs (England) 2000	100	(500 SHOs)
NTNs (England and Wales) 2004	115	

This specialty has seen one of the lowest of all consultant expansion rates. It has undergone considerable amalgamation of inpatient sites with hub and spoke working.

Although all consultants and SpRs must be medically and dentally qualified, SHOs are almost always singly qualified in dentistry, making cross-cover with other surgical specialties difficult or impossible. This fact has contributed to amalgamation of inpatient sites and the unprecedented expansion of NCCGs.

This is the only specialty in which the number of NCCGs exceeds the number of consultants. To achieve a consultant-delivered service requires considerable expansion.

This specialty requires a presence wherever facial injuries (500,000 per annum) are received,¹⁵ as well as in cancer units and centres treating head and neck cancer, and in cleft lip and palate centres. Uniquely, approximately 60% of new patient referrals are from primary care dental practitioners.

Currently, there are still 20 single-handed consultants and six long-term vacancies.

The ideal team structure for a population of 500,000 based on recommended workload and case mix would be:

three to four consultants;
two to three SpRs;
two to three NCCGs; and
five to six SHOs.

The specialty feels strongly that one fixed session is required for clinical governance/service modernisation.

PLASTIC SURGERY

		DH/NHSE data
Current consultant numbers (England and Wales) (1:270,000)		188
Senate of Surgery target (1:100,000)		520
Current shortfall on Senate target		332
Estimated numbers by 2009		286
Estimated 2009 shortfall on Senate target		234
NHSE statisticians' 2001 requirement		204
NHSE statisticians' 2009 requirement		360
		(likely shortfall of 74)
Historic expansion rate		7%
Agreed SWAG expansion rate 1999-2009		5.4%
NTNs (England) 2000	143	(142 SHOs)
NTNs (England and Wales) 2004	153	

The moderately high historical consultant expansion rate has been driven by the demand for plastic and reconstructive services based largely on hub and spoke configurations. The nature of plastic surgery has led to collaborative working with most other surgical disciplines and the emergence of subspecialisation in areas such as hand surgery, breast reconstruction, head and neck surgery, and cleft lip and palate surgery. Subspecialisation is tending to lead to the de-skilling of many plastic surgeons in the generality of the specialty, which may threaten the safety of the on-call service without considerable consultant expansion.

The *National Cancer Referral Guidelines* have introduced a significant added workload in skin cancer. A recent survey indicated that the management of cancer takes up over 50% of the elective workload of over one-third of plastic surgeons.

The current model of sub-regional centres providing outreach services is likely to continue but requires strengthening. There are 18 subspecialty interests within plastic surgery but most surgeons also do general plastic surgery. It is unlikely that the Senate targets will be achieved in the short term due to limitations on training capacity, but the estimated 2009 figures may need to be revised upward.

Plastic surgery has only 29 non-consultant career grades. Currently there are 10 locum consultants in post and six chronically unfilled posts.

For a centre serving a population of 500,000 the ideal surgical team would comprise:

- five consultants;
- five SpRs; and
- five SHOs.

The specialty feels strongly that one session per week is required for clinical governance/service modernisation.

CARDIOTHORACIC SURGERY

		DH/NHSE data
Current consultant numbers (3.6:1,000,000)		198
Senate of Surgery target (1:182,000)		286
Current shortfall on Senate target		88
Estimated numbers by 2009		300
Estimated 2009 shortfall on Senate target		-14
NHSE statisticians' 2001 requirement		221
NHSE statisticians' 2009 requirement		465
		(likely shortfall of 165)
Historic expansion rate		6%
Agreed SWAG expansion rate 1999-2009		6.8%
NTNs (England) 2000	186	(156 SHOs)
NTNs (England and Wales) 2004	211	

Of the existing consultant workforce, 35 conduct thoracic surgery only and it is estimated that to achieve a satisfactory level of service, approximately another 50 consultant thoracic surgeons will be needed.

With the NSF in coronary heart disease it is estimated that there will be an 80% increase in activity by 2008, a rise in annual procedures from 22,000 to 41,000. To achieve these numbers will require considerable expansion of capacity (buildings and other staff).

The current large increase in trainee allocations should match the 2008 workload targets provided recruitment levels remain satisfactory. There are some concerns about continuing sufficient training capacity with the rapid increase in the training numbers.

There is a particular need in this specialty to convert FTTA posts in areas with high standardised mortality for coronary artery disease.

NEUROSURGERY

	DH/NHSE data		Specialty data
Current consultant numbers (England) (1:400,000)	139		148
Senate of Surgery target (1:250,000)	208		208
Current shortfall on Senate target	69		60
Estimated numbers by 2009	202		
Estimated 2009 shortfall on Senate target	6		
NHSE statisticians' 2001 requirement	148		
NHSE statisticians' 2009 requirement	228		
		(likely shortfall of 26)	
Historic expansion rate	5%		
Agreed SWAG expansion rate 1999-2009	5%		
NTNs (England) 2000	119	(128 SHOs)	97
NTNs (England and Wales) 2004	129		99

The specialty has published detailed workforce plans in *Safe Neurosurgery 2000*¹⁶ and the *British Neurosurgical Workforce Plan 2000-2015*.⁴³ The latter is an integrated workforce plan that assumes 180-250 operations per consultant.

The nature of the specialty does not allow the recruitment of a significant number of NCCGs.

There is currently wide variation in the numbers of consultants, dedicated intensive care beds and nursing staff in the 18 neurosurgical units in England, four in Scotland, two in Wales and two in Ireland.

Arguing for an integrated UK-wide plan, the Society of British Neurological Surgeons (SBNS) suggests that 295 consultants are required by 2015, involving an increase of 52 SpRs by 2008. Additionally, a further increase of 1,853 registered nurses (6.1% per year) is required. The society also details the need for substantial increases in neurosurgical and dedicated ITU beds, unit by unit.

Neurosurgical units should serve populations of at least 1.25 million to be viable.

PAEDIATRIC SURGERY

	DH/NHSE data	
Current consultant numbers (1:515,000)		104
Senate of Surgery target (1:300,000)		173
Current shortfall on Senate target		69
Estimated numbers by 2009		130
Estimated 2009 shortfall on Senate target		43
NHSE statisticians' 2001 requirement		108
NHSE statisticians' 2009 requirement		147
		(likely shortfall of 17)
Historic expansion rate		10.4%
Agreed SWAG expansion rate 1999-2009		3.7%
NTNs (England) 2000	63	(97 SHOs)
NTNs (England and Wales) 2004	69	

The specialty is very concerned that the limited expansion in training numbers cannot sustain adequate consultant expansion.

Specialist paediatric surgery is usually located in specialist children's hospitals or large university teaching hospitals; there are smaller units in some DGHs. Specialist paediatric surgery includes neonatal surgery, the surgical management of infants and children with conditions requiring specialist expertise (eg, oncology, complex gastrointestinal and thoracic abnormalities), and paediatric urology. Most specialist children's units admit patients up to the age of 16.

General paediatric surgery includes the surgical management of relatively common straightforward conditions, including herniotomy, orchidopexy and appendicectomy, and is provided in DGHs by general surgeons with training in paediatric surgery.

As a result of NCEPOD recommendations and other pressures, an increasing amount of general paediatric surgery is being transferred from DGHs to specialist centres. This is placing pressure on the resources and manpower in specialist centres. Because of this, as well as the increasing range of responsibilities being placed on consultants, more paediatric surgeons will be required in the near future than are currently predicted by the NHS Executive. The Senate of Surgery target is more realistic. In light of this, the proposed limited expansion in SpRs by 2004 must be questioned.

There is a particular acute shortage of new consultants trained in specialist paediatric urology.

At a specialist centre serving a population of 2.5 million, the ideal team would consist of seven to eight consultant specialist paediatric surgeons and urologists, six SpRs and eight SHOs. This configuration would support subspecialty interests

and teamworking, which already exists with a number of paediatric specialties, notably oncology, respiratory medicine, gastroenterology and nephrology.

There are approximately seven NCCG's and seven Trust doctors in the specialty. These may increase if the number of SpRs is not maintained.

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EVIDENCE RECEIVED

Members of the Working Party are grateful for advice and evidence provided by the following bodies:

The Association of Surgeons of Great Britain and Ireland

The British Association of Oral and Maxillofacial Surgeons

The British Orthopaedic Association

The British Association of Otorhinolaryngologists (Head and Neck Surgeons)

The British Association of Paediatric Surgeons

The British Association of Plastic Surgeons

The British Association of Urological Surgeons

The Society of British Neurological Surgeons

The Society of Cardiothoracic Surgeons of Great Britain and Ireland

The Specialist Advisory Committee in Cardiothoracic Surgery

The Specialist Advisory Committee in General Surgery

The Specialist Advisory Committee in Neurosurgery

The Specialist Advisory Committee in Oral and Maxillofacial Surgery

The Specialist Advisory Committee in Otorhinolaryngology

The Specialist Advisory Committee in Paediatric Surgery

The Specialist Advisory Committee in Plastic Surgery

The Specialist Advisory Committee in Trauma and Orthopaedics

The Specialist Advisory Committee in Urology

The Joint Committee on Higher Surgical Training

The Council of the Heads of Medical Schools

The Professional Standards Board of The Royal College of Surgeons of England

The Council of The Royal College of Surgeons of England

The Specialty Workforce Advisory Group Secretariat

NHSE Workforce Statistics Division