What impact will shortened training have on urological service delivery?

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ABSTRACT

INTRODUCTION Modernisation of Medical Careers dictates a shortening of the training required to achieve consultant status. Precisely what type of work these consultants could be expected to accomplish, and be trained to do, is not clear. The objective of this study was to demonstrate a method of stratifying urological workload so as to determine what a urological trainee, undergoing shortened training, might be expected to do as a consultant and to use this stratification to help manpower planning within the specialty.

PATIENTS AND METHODS A cohort study of all urological activity undertaken over a 3-year period in a single teaching hospital in the UK was performed. All out-patient, in-patient or day-case activity within the urological department was analysed in the years 2000–2002. Urological activity was stratified according to the absolute numbers of patients presenting for different types of out-patient consultation, the grade of complexity of any surgical intervention undertaken, and the theatre resource consumed by the study population.

RESULTS Utilising prospectively collected data, it was possible to aggregate information about the contributions generalist and sub-specialty activity made to the overall workload of a urological unit. Whilst the majority of out-patient activity, and almost 88% of the surgical workload, could be accomplished by consultants undergoing shortened training, 11.9% of specialised urological activity, consuming nearly 43% of the available theatre resource, was outwith the remit of such a specialist.

CONCLUSIONS Shortened training seems able to satisfy the service delivery needs of the majority of out-patient and day-case urological activity. It will not, however, fulfil the need for subspecialty-based training required to cope with the large minority of patients necessitating complex surgical intervention. Specialist training programmes, promoting advanced operative skills, need to be evolved in parallel to shortened training so as to ensure global urological service provision for the future.

KEYWORDS

Modernising Medical Careers – Shortened training – Office urology

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There has been an enormous change in the pattern of urological service delivery in the last 10 years with far greater emphasis on out-patient assessment and medical management of urological pathology.¹ The concomitant changes in specialist training means that much more service provision is being delivered by senior practitioners in the specialty.² The consultant body has, therefore, an expanded remit, delivering more service activity, providing education for trainees and maintaining professional development so as to offer the best quality, cost effective and evidence-based care – cornerstones of clinical governance.³ Achieving these objectives within the European Working Time Directive (EWT⁴) dictates that there is a need to expand the consultant workforce. The British Association of Urological Surgeons (BAUS) predicted, in 2002, that a consultant ratio

to population of 1:80,000 would enable this standard of service.⁵ There has, however, been a limited increase in consultant numbers, of 4–7% per annum, and the current rate of expansion is not adequate to fulfil the service pressures accompanying shortened waiting times for access to urological services.⁶

Modernising Medical Careers (MMC⁷) has been the Department of Health's (DoH) response to the need for consultant expansion. MMC proposes a shortening of training with the time from qualification to consultant status being truncated to 7 years. Trainees will spend 2 years in a foundation programme, after qualification,⁸ and there will then be amalgamation of BST and HST training into a 5-year seamless specialty training programme at specialist registrar (SpR) level. Consultant appointment will be achieved at

the end of this time with the award of a Certificate of Completed Training (CCT). Some CCT-holding consultants may, however, decide to undergo periods of further 'fellowship training' to enable them to practice in much the same way as current consultants do.⁹ The MMC agenda pertinent to urology, the vanguard specialty, is expected to come into force in early 2005.

There is recognition that the CCT-holding 'consultant urologist' will not be able to fulfil the operative remit of the current 'consultant urological surgeon',¹⁰ but the question begged is just how much of the current urological workload could, or would, the CCT holder, or a post-fellowship consultant, be able to perform?

A lack of detailed national data about urological activity prompted us to look at the out-patient and in-patient management taking place in the urological department of a single-site trust, over a 3-year period. There were two aims for this exercise. First, to develop a model that may be used to look at stratifying global urological activity to determine what workforce would be required to fulfil the service need. Second, we wished the analysis of these data to inform the debate about what a CCT-holding consultant urologist might be expected to be trained for, and do, and what the differential need for consultant urologists and post-fellowship consultant urological surgeons might be.

Patients and Methods

Data were collected prospectively, as part of the departmental clinical governance programme, and analysed retrospectively for the years 2000–2002 inclusive. During the study, the department was staffed by three consultant urologists offering both general and specialist services. Data were analysed to reflect the mean out-patient and in-patient work load of an individual consultant team. Operative activity has been represented to reflect the amount individual surgical procedures contributed to the overall departmental workload.

Out-patient activity

Comprehensive information about all out-patient activity was recorded centrally and reported annually as a statement of overall departmental activity. Clinics were grouped in three ways dependent upon the nature of the patients being seen:

1. General urology, to include haematuria clinics.
2. Protocol-driven nurse-led clinics, including prostate-assessment, self-catheterisation and nurse andrology clinics.
3. Specialist urology, to include andrology, endourology (including lithotripsy clinics), oncology, functional urology and paediatrics.

Only new patients were seen in 'one-stop' andrology, infertility and nurse-led prostate assessment clinics. Only follow-up patients were seen for treatment in lithotripsy, oncology and nurse-led self-catheterisation and andrology clinics.

Absolute numbers of referrals, attendees and DNA (did not attend, or non-attender) rates were recorded and represented as expressions of their contribution to the cumulative workload of both referrals, and patients seen. These data were also expressed in percentage terms for both new and follow-up patients.

Operative activity

Data regarding surgery undertaken were accrued for all patients having some form of intrusive procedure in the out-patient, day-case or in-patient environments. Operative data were codified and aggregated according to the OPCS4 classification, then stratified dependent upon the complexity of that surgical intervention into one of seven groups for analysis:

- A. Diagnostic lower urinary tract endoscopy, to include flexible cystoscopy, urethral dilatation, rigid cystoscopy with minor manipulation and double J-stent insertion.
- B. Simple inguino-scrotal surgery, to include all non-reconstructive surgery in the area.
- C. Penile surgery, excluding surgery for Peyronie's disease, impotence and urethral reconstruction.
- D. More complex scrotal surgery, to include orchidopexy, vaso-vasostomy and testicular prosthetic insertion.
- E. Lower tract endoscopy with intervention, including bladder neck incision (BNI), trans-urethral resection of bladder tumour (TURBT), trans-urethral resection of prostate (TURP), cystolithopaxy, optical urethrotomy and endoscopically guided supra-pubic catheter insertions.
- F. Upper tract endoscopy, including diagnostic ureteroscopy and ureteroscopy with simple manipulation.
- G. All reconstructive surgery, laparoscopy and complex interventions for oncological pathology or stone disease.

Absolute numbers of procedures were recorded for the study period and per year and were represented as an expression of their percentage contribution to the cumulative operative workload of the department.

Data were also collected regarding the number of operative sessions that were used for the various types of operative intervention over the 3 years studied. The purpose of this analysis was to determine what proportion of operative time was consumed dependent upon the complexity of operative intervention performed. All operating lists during the study period were reviewed retrospectively and the time taken up by a particular type of procedure was recorded by

Table 1A The distribution of new patient referrals to individual urology clinics, their clinic type, the number of new patients seen and the impact of the reason for referral on total out-patient workload

Clinic	Clinic type	New patient referrals	New patients seen	New patients – did not attend	% of new patient referrals	Cumulative new patients referrals (%)	Cumulative new patients seen (%)
General urology	1	4662	3791	871	65.5	65.5	65.1
Haematuria	1	907	764	143	12.7	78.2	78.2
Nurse-led prostate assessment	2	311	270	41	4.4	82.6	82.8
Andrology	3	670	493	177	9.4	92	91.2
Infertility	3	273	259	14	3.8	95.8	95.6
Paediatrics	3	298	250	48	4.2	100	100
Totals		7121	5827	1294	100	100	100

Table 1B The distribution of follow-up patient attendances at individual urology out-patient clinics, their clinic type, the number of follow-up patients seen and the impact of the reason for review on total out-patient workload

Clinic	Clinic type	Follow-up patient referrals	Follow-up patients seen	Follow-up patients – did not attend	% of follow-up patient referrals	Cumulative follow-up patients referrals (%)	Cumulative follow-up patients seen (%)
General urology	1	8759	7190	1569	75.6	75.6	74.9
Haematuria	1	154	131	23	1.4	77	76.3
Ward-based assessment	1	1246	1059	187	10.8	87.8	86.3
Nurse-led andrology	2	162	130	32	1.4	89.2	87.7
Nurse-led ISC clinic	2	477	382	95	4	93.2	91.6
Lithotripsy	3	414	385	29	3.6	96.8	95.6
Oncology	3	213	185	28	1.8	98.6	98.5
Paediatrics	3	165	141	24	1.4	100	100
Totals		11,590	9603	1987	100	100	100

ascribing a number of quartiles of the total list time for each group of procedures. These data were aggregated dependent upon the level of operative complexity involved:

A Flexible cystoscopy alone.

B–E Inguino-scrotal surgery up to, and including trans-urethral endoscopic resection.

F,G Trans-urethral ureteroscopy and complex or open surgery.

The results were collated as the absolute number of operative sessions utilised to perform the interventions for each group. These were then expressed as an average percentage of the total departmental operative time utilised by the groups during the study period.

Results

Out-patient activity

During 2000–2002, the unit received 7121 new patient referrals of which 5827 patients attended, *i.e.* 18.2% did not attend their appointment. The new patient workload equated to 792 new patient referrals, and 647 new patient attendances, per consultant per year. During the same period, 11,590 follow-up appointments were generated of which 9603 patients attended their appointment, representing a 17.1% DNA rate. The follow-up patient load equated to 1288 follow-up appointments, and 1067 follow-up attendances, per consultant per year. The detailed break-down of new-patient referrals and follow-up patient attendances in the out-patient clinic, and their contribution to the outpatient load, can be seen in Table 1A,B.

Table 2 Urological surgery performed in the urology unit

Procedure category		Number of procedures in 3 years	Number of procedures per year	Percentage (%) of all procedures	Cumulative (%) of all procedures
Group	Procedure				
Diagnostic lower urinary tract endoscopy					
A	Flexible cystoscopy	1868	623	40.6	40.6
	Rigid cystoscopy & minor manipulation	997	332	21.7	62.3
	Dilation urethral meatus	9	3	0.2	62.5
	Isolated insertion J-J stent	25	8	0.5	63.0
Simple inguino-scrotal surgery					
B	Epididymal cyst excision	16	5	0.3	63.3
	Epididymectomy	33	11	0.7	64
	Vasectomy	105	35	2.3	66.3
	Varicocelectomy	9	3	0.2	66.5
	Hydrocoelelectomy	46	15	1	67.5
	Patent processus vaginalis ligation	10	3	0.2	67.7
	Testicular biopsy	4	1	0.1	67.8
	Orchidectomy	20	7	0.4	68.2
	Miscellaneous	44	15	1.0	69.2
Penile surgery					
C	Circumcision	208	69	4.5	73.7
	Miscellaneous	86	29	1.9	75.6
More complex inguino-scrotal surgery					
D	Vasovasostomy	23	8	0.5	76.1
	Orchidopexy	21	7	0.5	76.6
	Insertion of testicular prosthesis	3	1	0.1	76.7
Lower urinary tract endoscopy with intervention					
E	BNi	14	5	0.4	77.1
	TURP	205	68	4.5	81.6
	TURBT	130	43	2.8	84.4
	Cysto-litholopaxy	21	7	0.5	84.9
	Urethrotomy	121	40	2.6	87.5
	Endoscopic guided SPC insertion	29	9	0.6	88.1
Upper urinary tract manipulation					
F	Diagnostic ureteroscopy	64	21	1.4	89.5
	Ureteroscopy plus manipulation	142	47	3.1	92.6
Major open and reconstructive surgery					
G		342	114	7.4	100

Displayed are the number of each procedures performed, the complexity group they fitted in to, and the proportion of the overall surgical workload represented by these procedures.

Of all new work, 78.2% was categorised as being general urological activity, 4.8% of new assessments were nurse provided with 17.2% of new referrals being evaluated in specialist clinic settings (Table 1A). Table 1B demonstrates the follow-up mix of patients with 86.3% of patients being reviewed for general urological problems; 5.3% of all

patients were followed up by nurses alone and only 8.4% of all patients were followed-up in specialist clinics.

Operative activity

During this same 3-year period, a total of 4595 operative procedures were undertaken which equates to 511 interventions

Table 3 The numbers, and percentages, of urological operating lists taken up by differing complexities of urological surgery

	2000	2001	2002	Cumulative totals
Group A	56 (17.4%)	62 (17%)	67 (18%)	185 (17.5%)
Groups B–E	129.25 (40.3%)	146.5 (40.2%)	155.5 (42.8%)	419.5 (39.6%)
Groups F & G	135.75 (42.3%)	155.5 (42.8%)	162.25 (43.5%)	453.5 (43.5%)
Total lists	321	364	373	1058

per consultant per year or 78.9 procedures per 100 new patients seen. The contribution each operation, or group of interventions, made to the cumulative operative workload can be seen in Table 2.

Diagnostic lower-tract endoscopy comprised 63% of all interventions, simple inguino-scrotal surgery 6.2%, penile surgery 6.4%, more complex inguino-scrotal surgery 1.1% and lower-tract endoscopy and manipulation 11.4%. Upper tract manipulation contributed 4.5% to overall operative activity whilst only 7.4% of cumulative surgery involved complex, laparoscopic or reconstructive procedures.

Over the 3 years, 1058 operating lists took place with an average of 353 per year (Table 3). Of the operative time, 17.5% was taken up by flexible cystoscopy which addressed 40.6% of operative patient workload. Surgery up to and including trans-urethral resection of the prostate (47.5% of the total patient load) utilised an additional 39.6% of the operative time whilst 42.9% of the theatre time allocation was taken up by the 11.9% of patients needing either upper tract manipulation or complex surgical intervention.

Discussion

The data are acknowledged to emanate from only one source and to be only reflective of the clinical activity being undertaken in that institution. These data were, however, collected prospectively, close to clinical activity, and are likely to be as free from the bias induced by retrospective coding tools such as ICD10.¹¹ Additionally, ICD10 has no application to out-patient activity unless subjected to an aggregation tool such as presumptive coding.¹²

We believe that by stratification of global departmental workload we can see what individual components, of both out-patient and in-patient activity, contribute to total workload. We would propose that this methodology is applicable to any size of population demanding service activity and could, therefore, be used to analyse comparable data in larger samples. Additionally, this service modelling tool can be used to determine the complexity of surgical intervention demanded by the incoming workload and this could

inform the decision about how many consultant urologists and how many urological surgeons may be required in a department.

The data show that the majority of out-patient, day-case and in-patient work could be undertaken to an expected standard by trainees undergoing a shortened period of less specialised urological training. What is not clear is to what level of operative competence CCT holders should be trained. Within the confines of seamless training¹⁵ and the EWTD,¹⁴ the amount of specialist operative exposure an individual trainee has is likely to be limited even within an optimal training environment.^{15,16} Informally, it has been suggested that trans-urethral prostatectomy (TURP) would be within the remit of the consultant urologist, but our data suggest that this level of operative competence may be difficult to attain for anything other than the most straightforward procedure. This could mean that very specific training could be required to deal with endoscopic resective surgery and its complications, common problems which might be within the expected competencies of a consultant urologist asked to take part in an on-call rota.

Whilst addressing the numerical volume of work presenting to a urological department, the consultant urologist would not be able to contribute to the management of the small number of patients requiring complex operative interventions, who utilise a disproportionately large amount of the departmental theatre resource. We know that acquisition of surgical skills takes time^{17,18} and would expect that fellowship programmes will need to provide modules of specialist knowledge and operative training within a well-defined curriculum so as to fulfil the current service need and the requirements of future trainee urological surgeons.

The current data are from too small a sample to conclude what the differential need for consultant urologists and urological surgeons might be. One might try to extrapolate the need for sub-specialists from data analysed by tools such as presumptive coding, although these are not widely adopted and would, again ideally, need to be applied to a large population to give valid results. One might suggest that as about 40% of operative time is consumed by

more complex surgery than a 60/40 split between urologists and urological surgeons is the ratio of different types of consultant required within a service delivery team. It is likely, however, that this ratio will depend upon their scope of practice within individual units and their contribution to networks of care.

Fundamental changes in medical training, so as to fulfil workload imperatives, will inevitably incite anxiety in individuals wishing to enter specialist training and those expected to train them.¹⁹ That anxiety needs to be tempered by the advantages consequent upon the expansion of consultant numbers, the decrease in work intensity and the benefits, to quality of service provision, of increasing specialisation. Our data suggest that a large volume of urological work can be achieved by consultant urologists being trained for a shorter length of time and with a smaller repertoire of operative skills. There is, undoubtedly, a requirement for fellowship programmes to train consultant urological surgeons for more specialised activity, although the number of such programmes can only be determined by larger population analysis subject to a uniform analytical tool. Further data are required to determine the proportion of consultant urologists who would, ideally, be incorporated in a urological team so as to optimise service delivery.

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