A 15-year longitudinal analysis of trends in elective urological surgery – an evidence base for Modernising Medical Careers

C NATHANIEL, VK SANGAR, SR PAYNE

Department of Urology, Manchester Royal Infirmary, Manchester, UK

ABSTRACT

INTRODUCTION The impact of *Modernising Medical Careers* on the differential need for consultant urologists and urological surgeons is as yet unknown. This study's aim was to determine what changes there had been in operative urological activity so as to predict the need for urological surgeons in the future.

MATERIALS AND METHODS A retrospective study of all elective operative urological surgery over a 15-year period was performed. The absolute numbers of patients presenting for different grades of surgery were aggregated and analysed using the Spearman's rank correlation test.

RESULTS Aggregated data from 27,839 procedures demonstrated no change in the number of operations (r 0.01; NS) or the number of diagnostic endoscopic procedures (r 0.21; NS) carried out over the study period. There was a decrease in endoscopic surgery related to a 70% reduction in trans-urethral resection of the prostate (TURP) (r -0.89; P = <0.0001) and an increase in ureteroscopic interventions (r 0.82; P = 0.0002) for stone disease. There was no change in the amount of major surgery carried out (r -0.43; NS) over the 15 years.

CONCLUSIONS There have been changes to the pattern of surgery urologists have provided over the last 15 years but the need for complex surgical interventions has not altered. This suggests there will be as great a need for operating surgeons in the future, as currently exists.

KEYWORDS

Modernising Medical Careers – Urological surgery – Audit

CORRESPONDENCE TO

Mr SR Payne, Consultant Urologist, Manchester Royal Infirmary, Oxford Road, Manchester M13 6HL, UK

T: +44 (0)161 276 8529; F: +44 (0)161 276 4221; E: stephen.payne@cmmc.nhs.uk

Modernising Medical Careers (MMC)¹ was published by the UK Department of Health (DH) in 2003. This document set out proposals for restructuring postgraduate medical education in order to produce high-quality, well-trained and accredited doctors who would be able to deliver healthcare appropriate for the 21st century. The principal changes involved: (i) the introduction of 2-year Foundation Programmes to replace the current pre-registration house officer (PRHO) and senior house officer (SHO) training; and (ii) a specialist training component lasting 3 years to replace the current specialist registrar grade. This scheme would result in seamless training towards the award of a Certificate of Completion of Training (CCT).

Urology has seen major technological advances that have resulted in significant changes in the way that diseases are diagnosed and treated; most patients require investigation, counselling and medical treatment or endoscopic and day-case surgery with relatively few requiring in-patient

operative treatment.¹ This change in service requirement has directed the British Association of Urological Surgeons (BAUS), The Royal College of Surgeons of England (RCSE) and the Joint Committee on Higher Surgical Training (JCHST) to embrace *Modernising Medical Careers* with urology being the pilot specialty for its implementation.

In December 2004, The Specialist Advisory Committee (SAC) in urology and BAUS, after consultation with the Postgraduate Medical Education and Training Board (PMETB) and the DH, published a meeting report titled *Modernising Medical Careers and Urology*.² In this, they outlined a consensus view from the meeting on various aspects of the new training programme that would result in the training of a 'consultant urologist' (CU). These individuals would be expected to practice within the remit of core urology and would be provided with a Certificate of Completion of Training (CCT). Further sub-specialist training would be required in order to become a 'consultant urological

Table 1 Categories of urological surgery

Procedure category	Procedure group	Procedures included
Diagnostic lower urinary tract endoscopy	A	Flexible cystoscopy Rigid cystoscopy and minor manipulation Dilation urethral meatus Isolated insertion J-J stent
Simple inguinoscrotal surgery	B	Epididymal cyst excision Epididymectomy Vasectomy Varicocelelectomy Hydrocoelelectomy Patent processus vaginalis ligation Testicular biopsy Orchidectomy Miscellaneous
Penile surgery	C	Circumcision Miscellaneous
More complex inguinoscrotal surgery	D	Vasovasostomy Orchidopexy Insertion of testicular prosthesis
Lower urinary tract endoscopy with intervention	E	BNI TURP TURBT Cystolitholopaxy Urethrotomy Endoscopic-guided SPC insertion
Upper urinary tract manipulation	F	Diagnostic ureteroscopy Ureteroscopy plus manipulation
Major open and reconstructive surgery	G	All major open, laparoscopic and reconstructive operations

surgeon' (CUS) who would be provided with a Certificate of Completion of Specialist Training (CCST). These individuals would provide management for more complex urological problems with in a specific sub-specialty area of expertise.

Amongst the discussions in *Modernising Medical Careers and Urology*,² manpower planning and unit profiles were discussed. The document states that in July 2004 the UK had 631 consultants, 235 specialist registrars, 146 staff and associate specialists and > 500 nurse specialists. Based on workload analysis, it states that the UK only requires 250–300 CUSs and 700–750 CUs. This is based on CUSs undertaking three or less operating lists per week. This would result in the average 3-man unit consisting of 2 CUs and 1 CUS. The data on workload analysis are, however, unpublished and leave doubt about these manpower assumptions.

The aim of this study was to determine what changes had occurred in operative urological activity by undertaking a 15-year longitudinal analysis with the intention of determining whether this could help predict manpower and unit profile requirements for the provision of a urological service in the future.

Materials and Methods

All in-patient operations undertaken in our institution in the 15-year period between January 1989 to December 2004 had been prospectively recorded by surgeons in operation diaries. All operations in this period were retrospectively collected from the diaries and grouped into procedure categories A–F (Table 1), where: A is diagnostic lower

urinary tract endoscopy; B is simple inguinoscrotal surgery; C is penile surgery; D is more complex inguinoscrotal surgery; E is lower urinary tract endoscopy with intervention; F is upper urinary tract manipulation; and G is major open or reconstructive surgery.

For analysis, the percentage of each procedure category as a proportion of all procedures was plotted against time (years). In addition, specific reference was given to the trend in the percentage of flexible and rigid cystoscopies as a proportion of lower urinary tract endoscopy and also to trans-urethral resection of bladder tumours (TURBT) and trans-urethral resection of prostates (TURP) as a proportion of lower urinary tract endoscopy and intervention. Spearman's rank correlation coefficient (r) was used to identify time trends for each category and plot.

Results

In total, 27,839 procedures were carried out during the 15-year period. The data show no significant change in the total number of cases per year over the study period ($r = 0.01$; $P = 0.98$; Fig. 1).

The contribution of procedures in categories A and E as a percentage of overall number of procedures is shown in Figure 2. The majority of lower urinary tract endoscopy is diagnostic (A), it being three times more common than interventional lower urinary tract endoscopy (E; about 20% versus 65%). In addition, over the 15 years studied, there have been no significant changes in the number of diagnostic endoscopies as a proportion of total operative workload ($r = 0.21$; $P = 0.44$). There has, however, been a trend towards a reduction in category E (interventional lower urinary tract endoscopy) cases ($r = -0.89$; $P < 0.0001$) from approximately 19% to 11% over the study period.

Comparison was made between the contributions of flexible and rigid cystoscopy to total operative activity per year (Fig. 3) Although no change in category A surgery was observed, the data show that during the 15-year period studied the proportion of rigid cystoscopies declined from about 45% to 14% ($r = -0.91$; $P < 0.0001$) whilst flexible cystoscopies significantly increased from 8% to 41% ($r = 0.79$; $P = 0.0005$).

Figure 5 Percentage contributions of TURP and TURBT, and lower urinary tract endoscopy with intervention as a whole, to total operative activity per year.

The change in proportion of cases in categories B, C, D, F and G are shown in Figure 4. Each accounts for less than 7% of all cases. Over the 15 years studied, there have been small, but significant, increases in category C (penile; $r = 0.78$; $P = 0.0005$) and category F (upper urinary tract intervention) surgery ($r = 0.82$; $P = 0.0002$) from 2% to over 5%. There has been no significant change in category B (simple inguinoscrotal; $r = 0.5$; $P = 0.29$) or G (major open and reconstructive) surgery ($r = -0.45$; $P = 0.11$) but category D (more complex inguinoscrotal) surgery has declined significantly from just over 3% to almost zero ($r = -0.73$, $P = 0.002$).

Comparison was made between TURP and TURBT and their contributions to category E (lower urinary tract endoscopy with intervention). The reduction in category E surgery (Figs 2 and 5) is shown to be almost entirely due to the reduction in the number of TURPs ($r = -0.89$; $P < 0.0001$; Fig. 5). The number of TURBT cases shows a small upward trend ($r = 0.6$; $P = 0.02$; Fig. 5).

Trends in the number of vaso-vasostomy cases is shown in Figure 6. There has been reduction in these cases over the 15-year period from about 2.5% to almost zero. This contributes almost entirely to the fall in category D (more complex inguinoscrotal surgery) cases.

Discussion

Modernising Medical Careers is currently at the forefront of discussions relating to the future of postgraduate medical education and training in the UK. In order to plan for adequate numbers of training posts, it is paramount that due time and attention is paid to the analysis of future consultant manpower requirements. The *Modernising Medical Careers and Urology* document² outlines the likely requirements for 'consultant urologists' and 'consultant urological surgeons' but there is little evidence base for its figures. This study, undertaken from prospectively recorded

Figure 6 Percentage contribution of vaso-vasostomy and more complex inguinoscrotal surgery as a whole, to total operative activity per year.

data, provides useful information for manpower planning and is the first of its kind.

This study provides an analysis of 15 years' worth of data that were recorded prospectively by urologists. Despite this, there is the possibility of error in collecting the data retrospectively as no account of whether the patient actually entered theatre was recorded in the diaries. However, notes alongside the diary entries were kept regarding cancellations; these cases were not included in the current data analysis. Furthermore, these data only represent in-patient theatre activity; it is likely that out-patient and day-case surgery activity records will add further information for manpower planning. It should be acknowledged that the data presented are from a teaching hospital with a tertiary referral component. The type of procedures undertaken may differ from non-teaching hospital units. However, the figures show that, in the present unit, 88% of cases were classed as core procedures whilst the remaining were major, and that this may be representative of most units.

Over the 15-year period during which these study data were recorded, this urology unit underwent significant manpower changes. At the start of the period, there were two consultants and at 15 years this had increased to four. The results show that the overall surgical workload has not changed significantly; in 1989, the number of operations per surgeon was 976 whilst in 2004 this had decreased to 521 per surgeon. This has resulted in reduced waiting times and suggests that patients are receiving a much-improved quality of service much of which is consultant delivered. The consultant expansion has also led to increased specialist interest; this is manifest in the increase in upper urinary tract manipulation cases in this series, with greatly improved quality of service.

The data have shown that, despite changes to practice, the overall amount of surgery performed has remained unchanged. Complex open surgery and some upper urinary

tract manipulation would come under the remit of the ‘consultant urological surgeon’. With regards to the core operations (A–E), the remit of the ‘office’ or ‘consultant urologist’, the number of procedures has largely remained unchanged or decreased.

The *Modernising Medical Careers and Urology* document suggests that there is an increasing need for out-patient activity and less demand for in-patient specialist operative urology. Further, it suggests that the future urology unit should comprise of 2/3 core ‘consultant urologist’ and 1/3 specialist ‘consultant urological surgeon’. Based on our data, this configuration will result in too few ‘consultant urological surgeons’ and this is likely to have a negative impact on the speed of the patients’ journey through the NHS with possible negative effects on waiting list figures. The current data suggest that a reverse configuration to that suggested in the *Modernising Medical Careers and Urology* document would be of greater benefit, that is 2/3 ‘consultant urological surgeon’ and 1/3 ‘consultant urologist’.

Conclusions

It is recognised that there needs to be a means of addressing the increasing need for out-patient and day-case activity, but the need for specialised operative skills has not decreased over the last 15 years. Any proposals to alter training schemes radically to provide appropriate manpower for future practice must address the clinical need. Current proposals to reduce the number of operating urologists significantly will leave a large gap between the demand for their skills and the number being trained.

References

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