

UK-trained doctors' early career choices for, and career progression in, individual surgical specialties

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Introduction: We report on doctors' early career choices for the surgical specialties, at selected time intervals after qualification, and compare choices with eventual specialty destinations.

Materials and Methods: The subjects were the UK medical qualifiers of 1974, 1977, 1983, 1993, 1996, 1999 and 2000. The study design was based on longitudinal self-completed questionnaire surveys. We matched each doctor's early specialty choice with their eventual specialty destination.

Results:

Match rates between early choice and later destinations varied between surgical specialties and, to a lesser extent, between cohorts. For example, considering the more recent cohorts (qualifiers of 1993, 1996, 1999, 2000), the percentages who chose ophthalmology one, three and five years after qualification, and eventually practised in ophthalmology, were 70%, 88% and 95% respectively. The corresponding figures for choosing and eventually working in plastic surgery were 34%, 47% and 73%. Overall, about one third of doctors who did not progress in their first year surgical choice did not have an eventual career in surgery. Of doctors who gave early choices for a surgical specialty, and whose eventual career was in surgery, 81% practised eventually in the area of surgery that they had specified as their choice three years after qualification; and over 95% practised eventually in their fifth year choice.

Conclusion:

Considering the doctors who expressed early choices for surgery and successfully progressed in it, the choice of surgical specialty within surgery was largely settled three years after medical qualification and almost wholly settled by five years after.

Introduction

The planning of specialty training should be informed by knowledge about when doctors make decisions about their choice of career specialty. Our UK nation-wide studies of career choices show that about 90% of practising surgeons indicated their wish to be surgeons when in their first year after graduation.⁽¹⁾ Our earlier publication grouped career choices for the surgical specialties as a whole and compared them with career choices for non-surgical specialties. In this paper we report on early career choices for, and career progression in, individual specialties within surgery.

Materials and Methods

For many years the UK Medical Careers Research Group has undertaken surveys, using postal questionnaires, of the career preferences of medical graduates from all UK medical schools. The questionnaires are mailed to all medical qualifiers in selected year-of-qualification cohorts. They are generally mailed at one, three and five years after qualification, then at seven and ten years, and at longer time intervals thereafter. In the year one, three and five surveys we ask doctors about their career intentions, including intentions about specialty choice, and in all surveys we ask doctors to give structured information about their current posts and about posts undertaken since the previous survey. We send up to five reminders to non-responders. Our methods have been described in greater detail elsewhere.^(2, 3)

For this paper, we report on the cohorts of doctors who qualified in 1974, 1977, 1983, 1993, 1996, 1999 and 2000. These comprise all the cohorts in our work programme for which we have data about early career preferences and eventual career specialty destinations. The timeframe for 'eventual' practice was ten years after graduation for

the cohorts of 1974, 1977, 1983, 1993 and 1996, and seven years after graduation (the latest data available) for the cohorts of 1999 and 2000. There were no new graduation cohorts between 1983 (studies undertaken by our predecessors) and 1993 (studies undertaken by us) because the Department of Health (DH) ceased funding the research in 1986. In 1993, the DH invited us to commence the surveys again.

In our questions about specialty choice, doctors were asked to specify their choice of long-term career. If they had more than one choice, they were asked to list up to three in order of preference and, if applicable, to indicate that choices were of equal preference (which we termed 'tied choices'). We based our groups of surgical specialties on the Royal College of Surgeons' categorisation of surgical specialties.⁽⁴⁾ We distinguished between choices and career destinations for general surgery, cardiothoracic surgery, ear nose and throat, neurosurgery, ophthalmology, oral and maxillofacial surgery, paediatric surgery, plastic surgery, trauma and orthopaedic surgery, and urology. There were some differences in the data available to us before 1993 and thereafter. In the data from 1993 and on, we grouped respondents who (in fairly small numbers) specified career choices for vascular surgery (30 doctors in Year 1), colo-rectal surgery (10), gastro-intestinal surgery (21), head and neck surgery (6), hand surgery (2), and renal transplant surgery (5) as 'other surgery'. We did so because the data from respondents who graduated before 1993, whose choices were for those specialties, had been coded in a single group as 'surgical sub-specialties without further details' (the original data as written by the doctors were no longer available). A larger group of respondents who had simply written 'surgery' (especially in year one after qualification) were also assigned to the group 'other surgery'. We recorded the career destinations of respondents working in surgery who did not give details of their specialty as 'surgery unspecified'. All nonsurgical destinations,

including those outside medical practice, were grouped as “other destinations”. In this paper if a respondent gave tied first choices within the surgical specialties (e.g. a tied first choice for trauma and orthopaedics and for general surgery), they were treated as having given a tied 1st choice for each individual specialty within surgery. In the results below we focus on untied first choices to simplify presentation, except where otherwise indicated. Agreement between early choice and eventual destination – referred to in this paper as ‘the match rate’ – was defined as a match if the respondent had chosen a specific surgical specialty, e.g. urology, and was later working in that same specialty.

Results

Response rates

The graduates of 1974, 1977, 1993, 1996, 1999 and 2000 were surveyed one, three and five years after graduation; the cohort of 1983 was surveyed one and three years after graduation. Excluding doctors known to be deceased, doctors who declined to participate, and doctors who were not contactable, the response rates to our surveys of early career choice were 75% (18995/25459) at one year, 70% (17874/25421) at three years, and 70% (14971/21542) after five years.

Using data from several subsequent surveys, the doctors’ career destinations ten years after graduation were known for 74% (14128/18995) of those who replied at year one, 76% (13656/17874) of those who replied at year three, and 77% (11509/14971) of those who replied at year five. Respectively, these figures represent 56%, 54%, and 53% of the whole cohorts.

Looking forward from early choice to eventual destinations

Table 1 shows the predictive ‘match’ rates between an early choice for each specialty and eventual destination in the specialty, subdivided into the older cohorts (the qualifiers of 1974, 1977, 1983) and the younger cohorts (the qualifiers of 1993, 1996, 1999, 2000). It shows, for example, that 23% of the doctors in the older cohorts who specified a career preference for general surgery in their first post-qualification year eventually practised in general surgery; and that the corresponding figure for the younger cohorts was 26%. The specialties with the highest predictive power of early choices were ophthalmology (75% who chose it in year one in the older cohorts, and 70% in the younger cohorts, eventually practised in it); and oral and maxillo-facial surgery (which included a high proportion of doctors who entered medical school with a dental qualification). As expected, the doctors’ year three and year five choices were much more highly predictive of eventual destinations than were their first year choices (Table 1). Comparing the older and younger cohorts, match rates tended to be higher in the latter; but the differences were not substantial.

<Table 1 here>

Looking back from specialty destinations to early choices

The starting point for this analysis, shown in Table 2, was the specialty destination of the doctors ten years after qualification (or seven years for the qualifiers of 1999 and 2000). It shows, for example, that of all doctors working in cardiothoracic surgery in the younger cohorts, 27% had specified it as their first choice of career one year after qualification, 68% had specified it at three years, and 77% at five years. Of all doctors working in ear nose and throat surgery in the younger cohorts, 29% had specified it as their first choice of career one year after qualification, 62% had specified it at three years, and 96% at five years. As with the analyses “looking forward” from early choice

to eventual destination, match rates were a little higher for the younger than older cohorts, particularly in matches between year five choices and eventual destinations, but the differences were not great.

<Table 2 here>

Specialty profiles of early choice and later destinations

The doctors' specialty choices in years one, three and five were cross-tabulated against their eventual destinations (Tables 3, 4 and 5). Table 3 shows, for example, that of 625 doctors who expressed a first year choice for a career in general surgery, 150 eventually practised in general surgery, 70 in trauma and orthopaedic surgery, 39 in urology, smaller numbers in other surgical specialties, and 275 did not eventually have a surgical career. Of 206 doctors who specified ophthalmology in year one, the majority (148; 72%) practised eventually in ophthalmology and most of the rest did not have careers in surgery. The general pattern was that, when early specific surgical choices did not match the corresponding specialties later, many of the doctors were not eventually in surgical careers.

<Table 3 here>

As Table 3 shows, there were appreciable numbers whose destination was in surgery but for whom the early career choice did not 'match' the surgical destination. Considering the doctors who specified one of the ten named specialties as their choice and who eventually practised in one of them – the shaded area in Table 3 – 61% (589/967) had an eventual career in the specialty they chose in year one and the remaining 39% changed between surgical specialties. Confining the analysis to

doctors in the younger cohorts (qualifiers of 1993, 1996, 1999, 2000), who had an eventual career in surgery, a very similar percentage, at 60% (411/681), had a career in the specialty they chose in year one. Numerically, the largest category of change was that of doctors who originally specified 'general surgery' subsequently working in more specialised areas of surgery.

<Table 4 here>

Mismatches between choice and destination became less common, as expected, when considering year three and five choices (Table 4, Table 5). There were 1176 doctors with both year three choices and eventual destinations in specific surgical specialties – the shaded area in Table 4. Of these, 952 (81%) had the same year-three choice and eventual destination. The corresponding percentage for the younger cohorts was very similar at 82% (639/780). The largest categories of change, numerically, were between general surgery and trauma and orthopaedics, and between general surgery and urology (Table 4).

<Table 5 here>

There were 1170 doctors with year five choices and eventual destinations in the specific surgical specialties (Table 5). Of these, 1109 (95%) had the same year-five choice and eventual destination. The corresponding percentage for the younger cohorts was 97% (848/876).

As Tables 4 and 5 show, when doctors do not progress in the surgical specialty of their choice in years three and five, they are much more likely to have moved out of surgery than to have moved to another surgical specialty.

Discussion

The strengths of our study are that the surveys are large in scale, national, and, in particular, that they are prospective. The information on early career choices was provided to us contemporaneously by the doctors, and we followed up their future choices and career pathways. We therefore avoided recall bias and any tendency to rationalise early choices with hindsight. The study is also unique and will remain so: there are no other sources of similar data about career choice in the UK over the period covered by our study and no other group is ever likely to assemble such data retrospectively. A potential weakness is non-responder bias. Doctors who change specialty choice and progression may be more likely, or perhaps less likely, to reply to our questionnaires than doctors whose choice and destination match closely.

In the past few years, changes to the structure of postgraduate medical education in the UK have shortened the duration of training and streamlined postgraduate career progression, with the effect that junior doctors now need to specify their career choices at an increasingly early stage. This may be less of an issue for surgery than for other specialties, as, even in the past, the great majority of practising surgeons knew that they wanted to be surgeons in their first post-qualification year. Decisions about career specialty choice are influenced by a number of factors, including enthusiasm for the specialty and aptitudes for it (Goldacre, Laxton et al. 2010), the influence of role models, academic opportunities, exposure to the specialty (5) and perceived lifestyle associated with the specialty (6, 7). McHugh et al reported that the most important factors in the decision to embark on surgical training were intellectual challenge, role models and undergraduate experience;(5, 7) and (8) also emphasised the importance of role models in influencing specialty choice for

surgery. A related factor is the extent, or lack of, exposure to individual branches of surgery at medical school. For example, others have reported that exposure to urology during medical school training has always been low, and often seen as an element of general surgery rather than (or as well as) a specialty in its own right (6).

We note that quite a large number of those who chose specialties in our 'other surgery' group eventually became general surgeons. This may reflect our inclusion of vascular, gastro-intestinal and colorectal surgery choices under 'other surgery' for historical reasons (see Method) rather than any switch to general surgery by these doctors.

Some specialties within surgery have a very high match rate between early choices and later destinations, notably ophthalmology and oral and maxillo-facial surgery. This indicates that most doctors who aspire to them from the first post-qualification year do not need exposure to other areas of surgery other than that required for them to practise safely in their chosen area. For oral and maxillofacial surgery trainees, Dhanda et al reported that basic surgical training has been reduced by half to one year since the introduction of Modernising Medical Careers (MMC), although the range of specialties they experienced were similar before and after.(9) Experience in Canada showed that where clinical training has been reduced, surgical graduates still had 'acceptable' skills but appeared to lack confidence and some opted for a clinical fellowship as a means to add to their experience and expertise.(10)

Conclusion

In summary, of those who progress in surgery, there are shifts in choice of individual surgical specialty between the first year after medical graduation and eventual career destination. Shifts between specialties from year three after graduation become less common, but are sufficiently common that there should be some flexibility to accommodate them. Shifts between surgical specialties are very uncommon from year five. Our findings document combinations of surgical specialties that are, and those that are not, common combinations in switching from an early surgical choice to an eventual surgical destination.

Contributors: MJG and TWL designed the study, GM and TL analysed the data, and MJG and GM wrote the first draft. All the authors contributed to further drafts, and all are guarantors. All authors had full access to all of the data in the study and take responsibility for the integrity of the data and accuracy of the data analysis.

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Table 1: Looking forward from early specialty choices to later specialty destinations: percentage of doctors giving each choice at year one, three or five after qualifying who practised eventually in the specialty, subdivided into older cohorts (qualifiers of 1974, 1977, 1983) and younger cohorts (qualifiers of 1993, 1996, 1999, 2000)

	Percentages			Numerators			Denominators		
	Year 1	Year 3	Year 5	Year 1	Year 3	Year 5	Year 1	Year 3	Year 5
<u>Older cohorts</u>									
General surgery	22.6	44.3	61.3	47	82	73	212	185	119
Cardio-thoracic surgery	35.3	50.0	73.3	6	7	11	17	14	15
ENT	46.2	80.0	96.7	12	32	29	26	40	30
Neurosurgery	33.3	60.0	88.9	5	9	8	15	15	9
Ophthalmology	74.6	93.0	92.0	53	80	46	71	86	50
Oral & Maxillofacial surgery	75.0	89.5	92.9	18	17	13	24	19	14
Paediatric surgery	9.1	27.3	37.5	1	3	3	11	11	8
Plastic surgery	31.3	44.8	64.3	5	13	9	16	29	14
Trauma & orthopaedics	29.1	48.8	72.8	30	61	67	103	125	92
Urology	33.3	60.0	16.7	1	3	2	3	5	12
<u>Younger cohorts</u>									
General surgery	26.4	54.7	83.6	103	127	179	390	232	214
Cardio-thoracic surgery	15.8	44.1	65.4	6	15	17	38	34	26
ENT	34.6	59.3	86.2	27	54	81	78	91	94
Neurosurgery	51.9	85.7	94.1	14	24	32	27	28	34
Ophthalmology	70.4	87.8	95.2	95	115	119	135	131	125
Oral & Maxillofacial surgery	80.4	91.5	94.2	41	43	49	51	47	52
Paediatric surgery	20.0	44.4	73.9	5	8	17	25	18	23
Plastic surgery	33.8	47.1	72.7	22	32	48	65	68	66
Trauma & orthopaedics	41.4	65.2	91.5	87	187	238	210	287	260
Urology	37.9	45.9	84.0	11	34	68	29	74	81

Table 2: Looking back from eventual destinations to early career choices: percentages of surgeons practising in each specialty who gave the specialty as their first choice of eventual career in answers to surveys when they were one, three and five years after qualification (older cohorts, 1974, 1977, 1983; and younger cohorts (1993, 1996, 1999, 2000)

	Percentages			Numerators			Denominators		
	Year 1	Year 3	Year 5	Year 1	Year 3	Year 5	Year 1	Year 3	Year 5
<u>Older cohorts</u>									
General surgery	31.8	62.1	73.7	47	82	73	148	132	99
Cardio-thoracic surgery	28.6	41.2	64.7	6	7	11	21	17	17
ENT	24.0	76.2	90.6	12	32	29	50	42	32
Neurosurgery	26.3	52.9	88.9	5	9	8	19	17	9
Ophthalmology	54.1	87.0	97.9	53	80	46	98	92	47
Oral & Maxillofacial surgery	85.7	89.5	92.9	18	17	13	21	19	14
Paediatric surgery	11.1	33.3	60.0	1	3	3	9	9	5
Plastic surgery	20.8	59.1	56.3	5	13	9	24	22	16
Trauma & orthopaedics	25.2	57.5	82.7	30	61	67	119	106	81
Urology	2.4	8.1	10.0	1	3	2	41	37	20
<u>Younger cohorts</u>									
General surgery	47.2	57.7	79.6	103	127	179	218	220	225
Cardio-thoracic surgery	27.3	68.2	77.3	6	15	17	22	22	22
ENT	28.7	62.1	96.4	27	54	81	94	87	84
Neurosurgery	36.8	66.7	88.9	14	24	32	38	36	36
Ophthalmology	71.4	93.5	96.7	95	115	119	133	123	123
Oral & Maxillofacial surgery	85.4	91.5	96.1	41	43	49	48	47	51
Paediatric surgery	26.3	44.4	89.5	5	8	17	19	18	19
Plastic surgery	32.4	51.6	85.7	22	32	48	68	62	56
Trauma & orthopaedics	36.9	71.6	92.6	87	187	238	236	261	257
Urology	14.1	49.3	89.5	11	34	68	78	69	76

Table 3: First choice of career one year after qualification and eventual destination²

Career destinations at year ten														

1. The emboldened numbers on the leading diagonals show “matches” between early choice and later destinations.

2. Career destinations were measured ten years after graduation for 1974, 1977, 1983, 1993 and 1996 graduates, and at seven years, the latest data available, for 1999 and 2000 graduates.

3. 18 995 doctors replied to the survey at year 1. Of these, the destinations of 4867 doctors at years ten or seven were unknown, leaving a total 14 128 above.

4. Other Surgery includes Surgery Unspecified and Other Surgical Specialties

Table 4: First choice of career three years after graduation and eventual destination 10 years¹ after graduation

First choices at year 3	Career destinations at year ten													
	General surgery	Cardio-thoracic surgery	ENT	Neurosurgery	Ophthalmology	Oral & maxillofacial surgery	Paediatric surgery	Plastic surgery	Trauma & Orthopaedic surgery	Urology	Other surgery	Surgery unspecified	Other destinations	Total
General surgery	209	7	5	4	3		5	7	26	21	13	13	104	417
Cardio-thoracic surgery	8	22		2					3				13	48
ENT	2		86	1	1			1		1			39	131
Neurosurgery	1		2	33						1	1		5	43
Ophthalmology					195				2				20	217
Oral & Maxillofacial surgery						60		3					3	66
Paediatric surgery	6						11	1	3	2		1	5	29
Plastic surgery	10		4	4		3		45	5	5	1		20	97
Trauma & Orthopaedics	26	3	10	2			1	16	248	12	2	3	89	412
Urology	1		1				2		7	37	2		29	79
Other Surgery	33	3	7	1	1	1	4	3	18	12	3	8	53	147
Tied surgical choices	33		6	4	1		3	6	21	7	2	3	13	99
Other first choices	23	4	8	2	14	2	1	2	34	8		3	11770	11871
Total	352	39	129	53	215	66	27	84	367	106	24	31	12163	13656

1. Career destinations were measured ten years after graduation for 1974, 1977, 1983, 1993 and 1996 graduates, and at seven years, the latest data available, for 1999 and 2000 graduates.
2. 17 874 doctors responded to the survey at year three. Of these, the destinations of 4218 doctors at year ten or seven were unknown, leaving a total of 13 656.
3. Other Surgery includes Surgery Unspecified and Other Surgical Specialties

Table 5: First choice of career five years after graduation and eventual destination 10 years¹ after graduation

Career destinations at year ten														
First choices at year 5	General surgery	Cardio-thoracic surgery	ENT	Neurosurgery	Ophthalmology	Oral & maxillofacial surgery	Paediatric surgery	Plastic surgery	Trauma &Orthopaedic surgery	Urology	Other surgery	Surgery unspecified	Other destinations	Total
General surgery	252	2	1		1			5	5	9	13	12	33	333
Cardio-thoracic surgery	3	28							2		1		7	41
ENT	1		110		1					1	1		10	124
Neurosurgery				40					1				2	43
Ophthalmology					165								10	175
Oral & Maxillofacial surgery						62		1					3	66
Paediatric surgery	3	1					20		1	1			5	31
Plastic surgery	3			1		1		57	5	1			12	80
Trauma & Orthopaedics	5							2	305	1		1	38	352
Urology	8							1		70		1	13	93
Other Surgery	25	2	1	1		1	1	2	2	2	7	7	15	66
Tied surgical choices	11	2		1			1	2	3	5		1	8	34
Other first choices	13	4	4	2	3	1	2	2	14	6		1	10019	10071
Total	324	39	116	45	170	65	24	72	338	96	22	23	10175	11509

1. Career destinations were measured at ten years after graduation for the cohorts of 1974, 1977, 1993 and 1996 and at seven years after graduation, the latest data available, for the 1999 and 2000 cohorts
2. 14 971 doctors responded to the survey at year five. Of these, the destinations of 3 462 doctors at year ten or seven were unknown, leaving a total of 11 509.
3. Other Surgery includes Surgery Unspecified and Other Surgical Specialties