BMJ Open

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-018086
Article Type:	Research
Date Submitted by the Author:	06-Jun-2017
Complete List of Authors:	O'Callaghan, John; Association of Surgeons in Training Mohan, Helen; Association of Surgeons in Training Sharrock, Anna ; Association of Surgeons in Training Gokani, Vimal; Association of Surgeons in Training Fitzgerald, J; The Association of Surgeons in Training, Williams, Adam; Association of Surgeons in Training Harries, Rhiannon; Association of Surgeons in Training
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Surgery
Keywords:	MEDICAL EDUCATION & TRAINING, SURGERY, HEALTH ECONOMICS

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE

John M O'Callaghan, Helen M Mohan, Anna E Sharrock, Vimal J Gokani, J Edward Fitzgerald, Adam P Williams, Rhiannon L Harries; on behalf of the Council of the Association of Surgeons in Training

Corresponding author: Rhiannon.harries@doctors.org.uk

Address: Association of Surgeons in Training, 35-43 Lincoln's Inn Fields, London WC2A 3PE

http://www.asit.org

http://twitter.com/ASiTofficial @ASiTofficial,

Running head: The cost of surgical training

Category: Original research

Funding: Nil

Keywords: surgical training, cost of training, surgical education, medical education, health economics

Word count: **3659**

Abstract

Objectives:

Applications for surgical training has declined over the last decade and anecdotally, the costs of training at the expense of the surgical trainee are rising. We aimed to quantify the costs surgical trainees are expected to cover for postgraduate training.

Design:

Prospective, cross-sectional questionnaire based study.

Setting/Participants:

A non-mandatory online questionnaire for UK-based trainees was distributed nationally. A similar national questionnaire was distributed for Ireland, taking into account differences between the healthcare systems. Only fully completed responses were included.

Results:

There were 848 and 58 fully completed responses from doctors based in the UK and Ireland, respectively. Medical students in the UK reported a significant increase in debt on graduation by 55% from £17,892 (2000-2004) to £27,655 (2010-2014), $p<0.01$. 41% of specialty trainees in the UK indicated that some or all of their study budget was used to fund mandatory regional teaching. By the end of training, a surgical trainee in the UK spends on average £9,105 on courses, £5,411 on conferences and £4,185 on exams, that are not reimbursed. Irish trainees report similarly high costs. Most trainees undertake a higher degree during their postgraduate training. The cost of achieving the mandatory

requirements for completion of training ranges between £20,000-£26,000 (dependent on specialty), except oral and maxillofacial surgery, which is considerably higher (£71,431).

Conclusions:

Medical students are graduating with significantly larger debt than before. Surgical trainees achieve their educational requirements at substantial personal expenditure. To encourage graduates to pursue and remain in surgical training, urgent action is required to fund the mandatory requirements and annual training costs for completion of training and provide greater transparency to inform doctors of what their postgraduate training costs will be. This is necessary to increase diversity in surgery, improve work-life balance and ensure surgery remains a popular career choice.

Strengths and Limitations of this Study

- This national study provides a large cross-sectional data set on the experience of the costs of surgical training by surgical trainees across all ten surgical specialties in the UK and Ireland
- The costs analysed provided a comprehensive overview of the breadth and depth of financial costs incurred by trainees.
- The wide-distribution of the survey and breadth of responses increased the likelihood that it is representative of trainee experience.
- It is recognised that some costs could be subject to recall bias, however the figures reported are largely consistent with the calculations we have made using the current prices of exams, courses and society memberships to verify the results.
- The overall number of completed responses was higher than required to power the study

Introduction

The number of trainees applying for surgical training has declined over the last decade[1]. Many factors including low workforce morale, poor work-life balance and recent contractual issues may act as a deterrent to medical students considering a career in surgery[2]. The cost of completing the mandatory postgraduate requirements to secure a higher surgical training programme post has been estimated to be between £2,735 and £20,780, dependent on surgical specialty (average £3,360) compared with medicine £2,815 and anaesthetics £2,215[3]. Following entry to higher surgical training, there are considerable ongoing costs incurred by trainees in order to meet the requirements for completion of training as mandated by the Joint Committee on Surgical Training (JCST). These include educational courses, conference attendance, Royal College membership and fellowship examinations and annual subscriptions, and specialty society membership subscriptions. In addition, trainees pay annual expenses such as registration with the respective regulatory bodies, the UK General Medical Council (GMC) or Irish Medical Council (IMC), medical indemnity insurance costs, and the JCST fee (paid by trainees in the UK).

In 2007, The Association of Surgeons in Training (ASiT) conducted a survey of UK surgical trainees, to assess the financial costs to trainees in surgical training[4]. The results demonstrated that the mean debt on qualification from medical school was over £20,000. However, in recent years there have been many new challenges facing the current generation of surgical trainees, including increased student debt, secondary to a rise in annual university tuition fees of up to £9,000 per annum[5]. It has previously been calculated that medical students graduating currently are unlikely to repay their student loan debt before reaching the 30-year point at which it is written off[6]. The salaries of male and female medical graduates diverge such that by the age of 55, the average male medical school

graduate earns 35% more[6]. This means that the average female graduate repays more when debt is low, but a lower amount when debt is high, compared to male graduates[6]. The cost of living has also increased; in the ten years, preceding November 2016 the UK Consumer Price Index (CPI) rose a total of 23.8%[7].

To assess the current situation, we repeated a refined study, with a broader remit and more in depth assessment of cost pressures on trainee surgeons in both the UK and Ireland. The main aim was to assess the true financial cost of training to the surgical trainee in each of the ten surgical specialties.

Methods

Participants and setting

Postgraduate surgical training in the UK and Ireland consists of a minimum of 8 years of training (except for oral and maxillofacial surgery (OMFS) and urology which is a minimum of 7 years) following completion of the initial post-qualification two-year Foundation Programme (or intern year in Ireland) **Figure 1**. Competitive entry occurs prior to both Core and Higher specialist training levels, except for neurosurgery, cardiothoracic surgery and Oral and maxillofacial surgery (OMFS) in the UK (and trauma and orthopaedics in Scotland), where run-through training from Core level exists. Core surgical knowledge is assessed by the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination and specialty specific knowledge during the later phase of higher surgical training is assessed by the Intercollegiate Fellowship of the Royal College of Surgeons (FRCS) examination.

In the UK and Ireland, the Joint Committee on Surgical Training (JCST) are responsible for curriculum development and quality assurance of all the surgical training programmes in the ten defined surgical specialities (cardiothoracic surgery, general surgery, neurosurgery, OMFS, otolaryngology, paediatric surgery, plastic surgery, trauma and orthopaedics, urology and vascular surgery). All surgical trainees are required to register with the JCST and to pay an annual fee (£255 at time of submission) that has more than doubled between 2010 and 2016. This fee supports the running costs of the JCST to manage trainee enrolment and recommendation for certification; the work of each of the ten surgical specialties 'Specialty Advisory Committee' (SACs); curriculum review and development and website support. The JCST training fee is covered for trainees in Ireland directly by funding received by the RCSI from the Health Service Executive (HSE).

In the UK, Local Education Training Boards (LETBs) provide funding to Local Education Providers (essentially the hospital where a trainee is employed) to cover the direct costs of delivering education and training. This sum includes two components: firstly, salary support of 50% of each doctor's basic salary; the second component is a placement fee of £12,400 per year, per trainee, to fund all costs involved in delivering education and training needs. It is from this placement fee that trainees apply for study funding support towards courses and conferences essential to their training, often referred to as 'study leave budget', with a restricted amount available dependent on the LETB. Funding for military trainees in the UK regular Defence Medical Services (DMS) is overseen by External Education and Training Support (EETS) within the Defence Deanery. Funding for training courses for military trainees is therefore at the discretion of the Defence Consultant Advisor and Defence Deanery[8]. In Ireland, the RCSI receives funding from HSE to provide surgical training, which covers the cost of the JCST fee, delivering the curriculum, human factors and operative skills training days. However, other elements essential for CCT are not directly provided. More details of funding for Irish trainees is given in **Appendix 1**.

At the time of survey distribution, there were 5,323 surgical trainees in the UK and 438 surgical trainees in Ireland[9].

Questionnaire design and distribution

A novel 54-item, survey tool was developed, consisting of free-text, binomial and variable scale responses. The questionnaire was designed with reference to previously published guidelines on conducting questionnaire research[10-12]. The online platform *SurveyMonkey®* (Palo Alto, CA, USA, www.surveymonkey.com) was used to build the survey. All individual question items were compulsory. No individually identifiable information was collected;

therefore, non-responders could not be identified for follow-up. No incentives were offered for participation. A link to the online survey was distributed to members of ASiT, surgical specialty associations, and local and national mailing lists of surgical trainees. All surgical trainees in the UK including foundation doctors were included, as appropriate to the level of analysis. A modified version of the survey was circulated to ASiT members and surgical trainees in Ireland, which reflected relevant differences in health systems and training. Interns were excluded from distribution of the survey in Ireland as contact details were only available for those registered as surgical trainees with RCSI. Data collection took place from 2nd December 2015 to 26th April 2016. The ethical dimensions of this non-mandatory, anonymous evaluation survey were considered and no concerns were identified. Participants consented to the use of the analysis, distribution and publication of anonymised grouped results.

This study was undertaken by ASiT (http://www.asit.org), a pan-surgical specialty professional body and registered charity in the UK (no: 274841) working to promote excellence in surgical training for the benefit of junior doctors and patients alike. ASiT is independent of the National Health Service (NHS), Surgical Royal Colleges, and specialty associations.

Data analysis

Only fully completed questionnaires were included in the analysis. Due to the differing healthcare structures and funding systems of postgraduate education and training in UK and Ireland, a modified version of the survey was used for Ireland and the results are presented separately. Military trainees were excluded due to low numbers and a separate training

funding structure. Data was graphed and analysed in *Excel®* (Microsoft, USA). Significance testing for continuous variables was conducted using Mann-Whitney U Test in *Stata®* (Statacorp, USA); statistical significance was accepted at $p<0.05$. Survey sample size calculations were based on standard published formulae and assuming a population of 6000 individuals, with alpha=0.01, 209 responses would be sufficient for margin of error of 0.03[13]. For readability, all values are presented to the nearest pound (£) or euro (€). We have used the exchange rate as accessed on 13th January 2017 of £0.87= €1.00 to provide comparisons between the two currencies[14]. The study results are reported in concordance with STROBE guidance on observational studies[15]. Results regarding costs are presented displaying trainees year of graduation in blocks of 5 years to show trends over time.

Costs of CCT to the trainee in each surgical specialty

Using guidance available from the JCST the total cost of achieving the mandatory and desirable requirements for CCT in each of the surgical specialties was also calculated. Where conference attendance was mandated, but no exact minimum number described, the cost of at least one attendance during the training period was calculated. For courses which required re-validation at the end of training, the reduced course cost of re-validation rather than a full attendance was used. Course costs from recognised bodies, such as the BMA and Surgical Royal Colleges, were used in all calculations, where applicable. Conference costs were calculated using the reduced rates available to society members or early registrations where possible.

Results

Of 1603 surveys submitted, a total of 868 fully completed responses were included in the analysis from doctors based in the UK, and 58 fully completed responses from doctors based in the Republic of Ireland. Respondent demographics by country of work are detailed in **Table 1.**

United Kingdom-specific responses

For the purposes of monetary analysis UK military doctors (n=20) were excluded from the main analysis, however a summary of military doctors' survey findings can be found in **Appendix 2**. This resulted in a total of 848 respondents for analysis. Of 848 respondents, 751 (88%) graduated from medical school in the UK. 89% (672) of these UK medical school graduates graduated with debt, with a mean of £25,404. The average debt by year of graduation has increased by 55% from £17,892 to £27,655 comparing graduates in the most recent generation (2010-2014) with those graduating between 2000 and 2004 ($p<0.01$) **Figure 2**.

There were 659 specialty trainee respondents from the UK (grades CT/ST1 to ST8) **Table 2**. Of these, 93% (618) responded that they were currently entitled to a study leave budget. The median value was £600 per annum (range £500-£835). Three LETBs reported no defined budget limit (Yorkshire and Humber, South West and Thames Valley). 41% of all respondents in specialty training indicated that some (31% of respondents) or all (10% of respondents), of their study budget was used to fund mandatory regional teaching.

By the end of training, a surgical trainee in the UK can expect to have spent on average £9,105 on courses, £5,411 on conferences and £4,185 on exams (£18,701) that they have

not been reimbursed through any source. Expense per year on conferences has marginally increased from £331 to £414 comparing older graduates with the more recent generation (2000-2004 versus 2010-2014, p=0.28). However, course expenses per year have increased significantly; the most recent graduates from medical school, graduating in the years 2010-2014, have spent on average £1,311 per year. This is an increase of 121% on the annual amount spent by medical school graduates graduating between 2000 and 2004 (p<0.01) **Figure 3**.

400 respondents (47%) from the UK have undertaken a postgraduate degree since graduating from medical school, with this proportion rising by the later stages of training (ST7-8 and post-CCT (Certificate of Completion of Training) fellow) to 68% (96/141). The average cost of the degree, including university fees and loss of earnings was estimated by respondents at £18,009; with an MD/PhD being the most popular higher degree completed (24.8%, mean cost £27,882), followed by MSc (21.3%, mean cost £11,090).

732 respondents from the UK (86%) and 340 of 349 trainees level ST3-ST8 (97%) pay an annual subscription to one of the four surgical royal colleges (mean £305 for all trainees, mean £386 for ST3-ST8). 700 respondents (82%) pay annually to their SAC-defined specialty society (mean £343) and 672 (79%) are members of the British Medical Association. Over the last year, the mean amount spent on journals was £72 and on textbooks was £212.

Ireland-specific responses

Of the 58 respondents, 57 were currently working in Ireland and one was on fellowship in the USA **Table 1**. 25 (43%) reported that they were currently entitled to a training fund **Appendix 1**. In the past year, trainees spent on average £1278 (€1469) on mandatory courses, including travel expenses to courses, many of which are outside of Ireland, of which

a mean of £784 (€902) euros was not reimbursed. Trainees spent a mean of £1,977 (€2,321) on non-mandatory courses, of which a mean of £1,850 (€2,164) was not reimbursed. In the past year, respondents had spent a mean of £1,153 (€1,353) on attending conferences, of which a mean £1,005 (€1,183) was not reimbursed. Since graduation, across all grades trainees had spent a mean £4,829 (€5,669) on examinations, of which a mean £3,402 (€4,004) was not reimbursed. For senior trainees (ST8), an average £9,796 (€11,500) had been spent on exams, of which £5,396 (€6,351) was not reimbursed.

47 respondents (n=81%) from Ireland had undertaken a post-graduate degree since graduating from medical school. The MCh was the most popular post-graduate degree (n=15, 26%), followed by the MSc (n=13, 22%) and MD (n=11, 19%).The average estimated total monetary cost of undertaking a postgraduate degree to the trainee, including course fees and loss of income, was £22,093 (€25,936).

Estimated costs of training (UK and Ireland) using CCT essential and desirable criteria

The costs range between £20,000 (€23,479) to £26,000 (€30,523) depending on surgical specialty, except OMFS, which is considerably higher (£71,431 or €83,858) due to the dual qualification in medicine and dentistry as well as having significantly more mandatory training courses than other specialties **Appendix 3**.

Only the minority of the costs are tax deductible, add to this the estimated cost of a postgraduate degree (£18,009 or €21,142), which many surgical trainees will also undertake at their own expense, and the estimated costs to the trainee increase to approximately £40,000 (€46,958, excluding OMFS).

Discussion

This study has shown that individual doctors incur many thousands of pounds in personal expense after graduating from medical school to pursue a career as a surgeon and to meet the requirements to complete surgical training. These costs are incurred in addition to the significant debt built up by most medical school graduates, a debt burden likely to rise further as a greater proportion of students graduate under increased student tuition fees in the UK. Many of the costs paid by the trainee towards their training are not recognised as tax deductible, yet are incurred to cover requirements that are essential to progress through training schemes, and therefore to maintain one's livelihood. Consultant surgeons-to-be now spend considerably more per year on courses than in the past, and these now represent the single largest training cost. Efforts to make surgery an attractive and inclusive career must include an equitable distribution of training costs to the trainee.

Individual trainees spend significant amounts on courses that are not actually mandatory as documented in CCT requirements. We speculate there are two reasons for this; firstly, surgical trainees will undertake courses above and beyond the minimum requirements to develop their skills. Gaps in knowledge and experience delivered in current training posts are likely to contribute to this, such that simulation courses are necessary to address training needs. As such, issues with training programmes failing to meet trainee's educational needs are instead transferred to trainees, who still obtain this necessary training at their own cost. Secondly, to be competitive for higher surgical training and for consultant posts, trainees may undertake additional courses and extracurricular activities.

We have identified a regional variation in what amount is available to trainees, despite the standardised placement fee from the LETB. Study budgets for specialty trainees were lower

than the values released in response to the recent FOI request by Varley *et al* in 7 out of 10 LETBs (North Central, South and North West London, North West England, East of England, Kent Surrey and Sussex and North East England), and equal in three LETBs (East Midlands, Wales, West Midlands)[16]. It is desirable that study budgets are standardised across the UK, in both amount and that they should not be top-sliced to provide mandatory regional teaching, and in the longer term all items deemed essential for CCT (including the JCST fee), should be funded directly, without expense to the trainee. ASiT has previously highlighted this issue of uncontrolled geographical variation, calling for an equitable approach through national standardisation[17].

Irish trainees bear similar high costs in surgical training to their UK counterparts, not surprisingly given that JCST requirements are the same. The higher cost of courses for Irish trainees may reflect increased travel and accommodation expenses, as many courses require travel outside of Ireland and the exclusion of Irish interns from the study, who are less likely to have undertaken expensive technical skills courses. The higher cost of exams may reflect in part a higher proportion of Irish trainees who undertake USMLE examinations to pursue a fellowship in the USA, as well as increased travel expenses to intercollegiate examinations often held in the UK. While funding is available to reimburse some of these expenses, it falls short of being sufficient to avoid trainees bearing the greatest burden of the cost. These costs are on top of annual mandatory costs such as membership or fellowship of RCSI. These are a significant additional cost- for example, the 2016/2017 subscription rate is £315 (€370) for fellows and £226 (€265) for members), and the annual Irish Medical Council(IMC) retention fee (£477 (€560) for those registered for less than 3 years and £515 (€605) for those registered for more than 3 years). Of note, the payment for

the Irish Medical Council (IMC) is an annual payment and cannot be split across the year which places a significant financial burden on trainees at the time of the year when they move jobs and incur considerable additional expenses.

Doctors need to be aware in advance of what their chosen pathway is likely to cost them, and this study has provided the most detailed assessment yet for both UK and Irish surgical trainees. It is difficult to compare the costs to other medical specialties as few similar studies have been undertaken in other disciplines. One calculation for the training costs towards the completion of CCT in Obstetrics and Gynaecology estimated slightly less than for surgical trainees, at £14,224[18]. Another calculation for only the early stages of training in other specialties was also slightly less for medicine and anaesthetics, than surgical specialties[3]. Comparisons to other professional careers, such as solicitors, are also difficult, but working in the private sector has additional benefits. After qualifying with a law degree, solicitors must complete a Legal Practice Course (LPC), which costs £8,500-£15,000 dependent on type of course and location[19]. It is however possible to have this cost covered by a law firm if obtaining a training contract in advance, and many law firms will also provide a living expense grant of several thousand pounds per year[20].

Research by the University of Kent for the Department of Health has provided cost-estimates for the training of various doctor grades from the start of medical school onwards[21]. This work found that the total cost of training a consultant was £564,112, with some contributions that came largely from the individual (such as undergraduate university fees, lost earnings, and postgraduate training fees) and others that came predominantly from the state (clinical placement, tuition and replacement)[21]. It is not possible from the document to disentangle the values independently contributed by each party.

An important consideration frequently overlooked in these analyses relates to the hospital activity performed by trainees generating hospital income. Doctors in training have a value as well as a cost, which should be taken into account to offset such cost-estimates. Two UK-based studies have sought to quantify this within surgical training[22,23]. In general surgery, an analysis of 1,184 out-patient clinic consultations demonstrated that trainees delivered a quarter of all out-patient related income, averaging £36,452 per trainee[22]. This was sufficient to offset 95% of the trainee's average basic salaries. Within ENT surgery, clinical activity undertaken by SHO grade doctors was calculated to generate an annual net income of £73,048 (4.3 times higher than their employment costs)[23]. Registrars generated an annual net income of £121,587 (5.4 times their employment cost). In total, 94% of trainees included in this analysis generated more hospital income than their employment costs. Given the benefit derived from hospitals from trainee-related clinical activity, it is reasonable that a proportionate amount of the associated costs of training should be borne by the employing hospitals.

The costs analysed in this study present a comprehensive overview of the breadth and depth of costs incurred by trainees. The survey was widely distributed across regions, specialties and grades, increasing the likelihood that it is representative of trainee experience. Future studies should seek to understand the balance of costs incurred by the health system in supporting training, which are poorly understood, the influence of training cost on career choice, and wider international comparisons on the costs of training in different health systems.

Conclusions

Medical students are graduating with increasing debt. Surgical trainees achieve their educational requirements through considerable personal expenditure, with a total estimated monetary cost to the trainee in the region of £40,000 (€47,000). The Certificate of Completion of Training in surgical specialties comes with significant costs, which until now have not been accurately estimated. The cost goes far beyond the national training fee paid to the JCST annually in the UK, and greater transparency is immediately necessary to inform doctors of what their postgraduate training costs will be across all specialties. We strongly believe that the costs of mandatory surgical training should be covered by the Local Education and Training Boards, including the JCST fee and the costs of achieving CCT mandatory requirements. Furthermore, funding should be made available for non-mandatory surgical educational activity deemed beneficial by the trainee's educational supervisor, to ensure surgeons are trained to the highest level to provide excellent care. This is necessary to increase diversity in surgery, improve work-life balance and make surgery a popular career choice again.

Acknowledgements

We thank all those trainees who took the time to complete the survey. We acknowledge the work done by Edward Fitzgerald and Charles Giddings on the previous 2007 costs of surgical training survey.

Contributors

RLH and JEFF conceived the study. All authors designed the questionnaire. JMOC collected the data. JMOC, HMM and RLH analysed the data. All authors were responsible for compiling and editing the manuscript, and approving the final article.

Competing interests

The authors are either current or previous surgical trainees, and current or past elected members of the Council of the Association of Surgeons in Training (Registered Charity No. 274841). JEFF is an employee of KPMG Global Health Practice, Honorary Clinical Advisor to the Lifebox Foundation charity, and a Trustee of the SURG Foundation research charity. The authors have no other relevant financial or personal conflicts of interest to declare in relation to this paper.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data sharing statement

Summary data is available from the corresponding author at president@asit.org. Consent to data sharing was sought prior to survey completion, and the presented data are anonymised grouped, hence risk of individual identification is low.

Table 1. Basic Demographics. Respondents divided by country of work.

Demographic	United Kingdom	Ireland
Number	848	58
Male: Female (%)	518:327 (61.3:38.7, 3 NR)	35:23 (60:40)
Mean Age (years)	31.6 (range 23-55)	31.3 (range 25 to 41)
LTFT Trainees (%)	36 (4.3)	0
Academic Trainees (%)	69 (8.1)	N/A

NR= Not Reported, LTFT= Less than full time training

Table 2. Specialty, stage of training and LETB (Local Education and Training Board) for respondents from UK.

Which specialty do you intend to pursue?	What is your stage of training?	In which LETB/Deanery do you work?
Cardiothoracic Surgery: 32 (3.8%) General Surgery: 296 (34.9%) Neurosurgery: 28 (3.3%) Oral and Maxillofacial: 19 (2.2%) Otolaryngology: 75 (8.8%) Paediatric Surgery: 29 (3.4%) Plastic Surgery: 66 (7.8%) Trauma and Orthopaedics: 172 (20.3%) Vascular Surgery: 59 (5.4%) Urology: 59 (7.0%) Other/Unsure: 26 (3.1%)	Foundation Year 1: 12 (1.4%) Foundation Year 2: 63 (7.4%) ST1/CT1/SHO1: 148 (17.5%) ST2/CT2/SHO2: 96 (11.3%) CT3/SHO3: 10 (1.2%) ST3/SPR1: 78 (9.2%) ST4/SPR2: 59 (7.0%) ST5/SPR3: 77 (9.1%) ST6/SPR4: 59 (7.0%) ST7/SPR5: 60 (7.1%) ST8/SPR6: 67 (7.9%) Post CCT: 17 (2.0%) Clinical Fellow: 35 (4.1%) Research Post:53 (6.3%) Other: 14 (1.7%)	Scotland: 70 (8.3%) Northern Ireland: 49 (5.8%) Wales: 51 (6.0%) North East: 42 (5.0%) North West: 80 (9.4%) Yorkshire and Humber: 55 (6.5% East Midlands: 51 (6.0%) West Midlands: 70 (8.3%) East of England: 61 (7.2%) Thames Valley: 41 (4.8%) Kent, Surrey and Sussex: 41 (4.8%) Wessex: 41 (4.8%) South West: 61 (7.2%) North East and Central London: 43 (5.1%) North West London: 44 (5.2%) South London: 46 (5.4%)

CT= Core Training, NCE = North Central and East London, SPR= Specialist Registrar, ST= Specialist Training.

Table 3. Specialty and stage of training for respondents from Ireland.

Which specialty do you intend to pursue?	What is your stage of training?
Cardiothoracic Surgery: 2 (3%) General Surgery: 22 (38%) Neurosurgery: 1(2%) Oral and Maxillofacial: 0 Otolaryngology: 2 (3%) Paediatric Surgery: 0 Plastic Surgery: 3(5%) Trauma and Orthopaedics: 20(34%) Vascular Surgery: 2(3%) Urology: 6 (10%)	ST1/CT1/SHO1: 13 (22%) ST2/CT2/SHO2: 10 (17%) ST3/SPR1: 12 (21%) ST4/SPR2: 5 (9%) ST5/SPR3: 4 (7%) ST6/SPR4: 2 (3%) ST7/SPR5: 1 (2%) ST8/SPR6: 3 (5%) Clinical Fellow: 1 (2%) Research Post: 1 (2%)

CT= Core Training, SPR= Specialist Registrar, ST= Specialist Training.

References

1. Joint Committee on Surgical Training National Selection Leads Group, Verbal Communication 2016.

2. Jaunoo SS, King TR, Baker RF, Adama HL. A national survey of reasons why students and junior doctors choose not to pursue a career in surgery. Annals of the Royal College of Surgeons 2014;**96 (Suppl)**:192-94

3. Stroman L, Weil S, Butler K, McDonald C. The cost of a number: can you afford to become a surgeon? The Bulletin of the Royal College of Surgeons of England 2015;**97**(3):107-11 doi: 10.1308/147363515x14162390057944[published Online First: Epub Date]|.

4. The Cost of Surgical Training, Position Statement. London, UK: Association of Surgeons in Training, 2007.

5. Student Loans in England: Financial Year 2015-16. Glasgow, UK: The Student Loans Company, 2016.

6. Ercolani MG, Vohra RS, Carmichael F, Mangat K, Alderson D. The lifetime cost to English students of borrowing to invest in a medical degree: a gender comparison using data from the Office for National Statistics. BMJ open 2015;**5**(4):e007335 doi: 10.1136/bmjopen-2014-007335[published Online First: Epub Date]|.

7. Statistical bulletin: UK consumer price inflation: Nov 2016: Office for National Statistics, 2016.

8. Defence healthcare education and training (DHET)- Applications polic for defence medical services (DMS) external education and training, 4-6-3. 1.2 ed. Joint Services Publication, 2014.

9. Joint Committee on Surgical Training and Royal College of Surgeons in Ireland, Verbal Communication.

10. Jones TL, Baxter MA, Khanduja V. A quick guide to survey research. Annals of the Royal College of Surgeons of England 2013;**95**(1):5-7 doi: 10.1308/003588413x13511609956372[published Online First: Epub Date]|.

11. Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). Journal of medical Internet research 2004;**6**(3):e34 doi: 10.2196/jmir.6.3.e34[published Online First: Epub Date]|.

12. Woodward CA. Questionnaire construction and question writing for research in medical education. Medical education 1988;**22**(4):345-63

13. JE B, JW K, CC H. Organizational research: determining appropriate sample size in survey research. Information Technology, Learning and Performance Journal 2001;**19**(1):43-50

14. ECB. Euro foreign exchange reference rates: European Central Bank, 2017.

15. von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet (London, England) 2007;**370**(9596):1453-7 doi: 10.1016/s0140-6736(07)61602-x[published Online First: Epub Date]|.

16. Varley I, Kumar A. Cost of training in oral and maxillofacial surgery: beyond the second degree. The British journal of oral & maxillofacial surgery 2016;**54**(8):956-58 doi: 10.1016/j.bjoms.2016.06.006[published Online First: Epub Date]|.

17. Fitzgerald JE, Giddings CE, Khera G, Marron CD. Improving the future of surgical training

and education: consensus recommendations from the Association of Surgeons in Training. International journal of surgery (London, England) 2012;**10**(8):389-92 doi: 10.1016/j.ijsu.2012.03.012[published Online First: Epub Date]|.

18. Orr K, Smith M. The financial burden of specialty training. BMJ Careers 2016;**353**(8063):542

19. Costs of qualifying. Secondary Costs of qualifying 2017. http://www.lawsociety.org.uk/law-careers/becoming-a-solicitor/costs-of-qualifying/.

20. TargetJobs- Law. 2017.

21. Curtis L, Burns A. Unit costs of health and social care 2016: Personal social services research unit, University of Kent, 2016.

22. Fitzgerald JE, Ravindra P, Lepore M, Armstrong A, Bhangu A, Maxwell-Armstrong CA. Financial impact of surgical training on hospital economics: an income analysis of 1184 out-patient clinic consultations. International journal of surgery (London, England) 2013;**11**(5):378-82 doi: 10.1016/j.ijsu.2013.02.017[published Online First: Epub Date]|.

23. Clamp PJ, Malpas G, Mason KA, Giddings CE. Surgeons in training – a financial burden or benefit to NHS trusts? Ann R Coll Surg Engl (Suppl) 2011;**93**:22-24

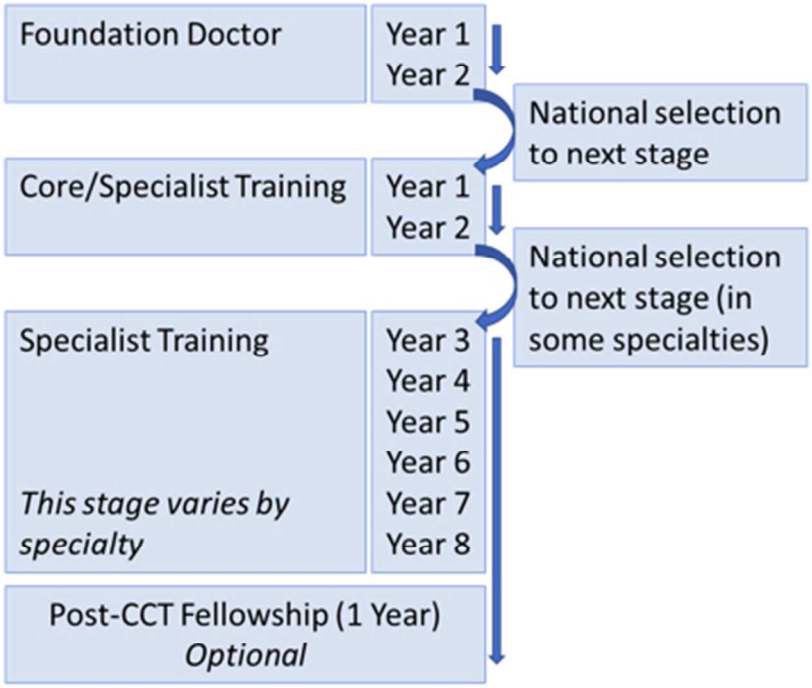

Figure 1. Stages and years of training for UK doctors training to be consultant surgeons. Foundation Doctor Year 1 is the first stage following graduation from university/medical school. In Ireland, the Intern Year is the equivalent of the Foundation Doctor stage in the UK.

185x142mm (72 x 72 DPI)

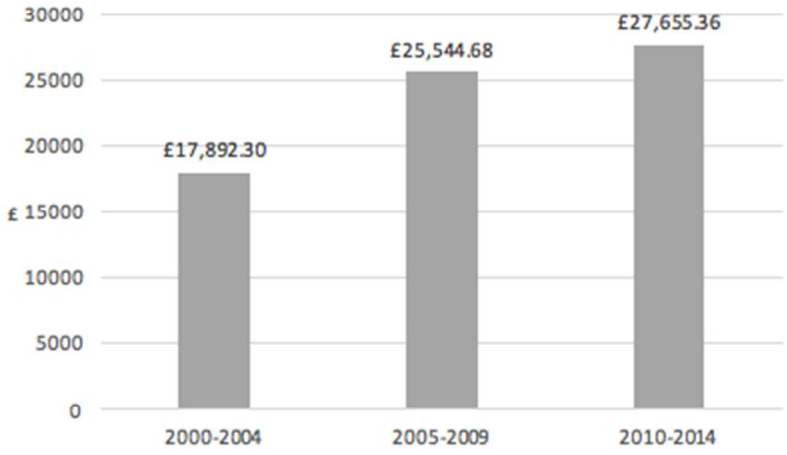

Figure 2. Mean debt on graduation from medical school, UK medical schools only. Debt has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01.

176x104mm (72 x 72 DPI)

Figure 3. Mean expense per year on courses and conferences that trainees have not been reimbursed. Trainees grouped into 5- year generations by year of graduation. Expense on courses has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01. Expense on conferences has not significantly increased (p=0.28). UK medical school graduates only.

181x89mm (72 x 72 DPI)

Appendix One: Sources of Funding for Higher Surgical Trainees in Ireland

In Ireland, as the RCSI directly administers surgical training in Ireland, it receives funding from the HSE to provide surgical training. This includes covering the cost of the JCST fee and delivering the curriculum, including human factors and operative skills training days. However, other elements essential for CCT such as a leadership course, train the trainers course and good clinical practice are currently not directly provided. There are three funding streams available to trainees on higher specialist training, equivalent to the UK "study budget"- the current funding available to HST trainees are:

1. Mandatory Fund- this is provided by the HSE/NDTP and administered by RCSI. It provides funding of up to 1500 euros for approved mandatory courses while in full-time training in Ireland. This fund does not carry forward year on year and cannot be used if for example, on an overseas fellowship. However, its scope is limited as only approved mandatory courses are funded (1).
2. Specialist training fund- this is a fund of 500 euros per year, which accumulates over the course of HST. It can be used for course fees, equipment costs and books etc. It excludes time spent out of full time training, e.g. on an overseas fellowship (1).
3. There is an additional clinical courses and exams fund, where trainees can claim 450 euros for exams or courses on a definitive list of those deemed relevant to the speciality. This includes a narrow list, for example Advanced Trauma Life Support (ATLS). For exams undertaken outside of Ireland, 650 may be claimed. This is directly administered by the HSE/MET (2). The fund will only cover the cost once per trainee per examination.

At the time of this survey, many trainees would have spent time prior to commencing HST completing courses to make themselves competitive to apply for HST at considerable personal cost. In addition, the range of courses covered by the above list currently excludes many courses undertaking by trainees in their surgical training.

It is worth noting that the fund does not adequately cover the cost of courses. For example, the clinical course and examination refund scheme will cover ATLS if undertaken in Ireland. The current cost of ATLS is 875 euros, but the scheme will only cover 450 euros. This does not include travel and accommodation costs to regional centres to complete the course. Similarly, for membership and intercollegiate examinations, this fund does not fully cover the cost, and as these are often held in the UK there are additional travel and accommodation expenses.

References Appendix 1:

1. RCSI Training Funds for SpR Trainees. http://rcsi.ie/files/surgery/docs/20161019040654_Funding-Information-2016.pdf Accessed 16th January 2017
2. HSE-National Doctors Training and Planning. Specialist Training Fund Guidance Document. July 2016.

Appendix Two: Results for military trainees

There were 20 military trainee respondents. All 20 graduated from medical school in the UK: 19 (90%) graduated with debt on graduation (mean £18,650). 16 (80%) had a military grant at medical school, 10 (50%) had a government student loan and 4 (20%) had a bank or other loan. The mean amount paid out, that was not reimbursed, for courses was £4250, for conferences £1643, and £2130 for exams. Mean costs per year included surgical royal college subscription (£317), specialty society membership (£336), journals (£79), text books (£245). 7 had completed an MSc (35%), 5 an MD (25%) and 1 (5%) had done both since graduating from medical school (mean cost £12822).

Which specialty do you intend to pursue?	What is your stage of training?
General Surgery: 6 (30%) Trauma and Orthopaedics: 6 (30%) Vascular Surgery: 2 (10%)	Foundation Year 1: 1 (5%) Foundation Year 2: 0 (0%) ST1/CT1/SHO1: 4 (20%) ST2/CT2/SHO2: 2 (10%) ST3/SPR1: 1 (5%) ST4/SPR2: 4 (20%) ST5/SPR3: 2 (10%) ST6/SPR4: 1 (5%) ST7/SPR5: 1 (5%) ST8/SPR6: 1 (5%) Post CCT: 1 (5%) Research Post: 2 (10%)

Demographic	Military Trainees
Number	20
Male: Female (%)	14:6 (70:30%)
Mean Age (years)	33.8 (range 27-41)
LTFT Trainees (%)	0 (0)
Academic Trainees (%)	1 (5%)

Appendix Three: Tables of costs to the trainee in each surgical specialty

Using the published requirements for progression through surgical training we have provided an estimated breakdown of the costs to the trainee in each surgical specialty. The following tables of costs assume straight progression through F1-ST8 without taking time out for LTFT, post-graduate degrees or other career breaks. These prices are correct as of November 2016. July 2016 CCT guidance used as per JCST website. Conference costs do not include travel or subsistence. BMA= British Medical Association, CCT= Certificate of Completion of Training, CST= Core Surgical Trainee, CT= Core Training (year), FP=Foundation Programme, FRCS= Fellowship of the Royal College of Surgeons, GMC= General Medical Council, HST=Higher Surgical Trainee, JCST= Joint Committee on Surgical Training, MRCS= Membership of the Royal College of Surgeons, RCS= Surgical Royal College, RCSEng= Royal College of Surgeons of England, RCPSCG= Royal College of Physicians and Surgeons of Glasgow, ST= Specialty Trainee (year).

Cardiothoracic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£710
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
RCSEng Specialty Skills in Cardiothoracic Surgery Course	£774
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
National or international conference attendance each year of training e.g. Society for Cardiothoracic Surgery conference booked as early bird rate as a member	£205 per year for 2 years as CST, £305 per year for 6 years as HST
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society for Cardiothoracic Surgery	£100 per year for 2 years as CST, £200 per year for 6 years as HST
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24039.00**

General Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (and completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
Course relevant to specialist interest e.g. RCSEng specialty skills in coloproctology	£585
ATLS revalidation to keep valid at time of certification	£350
Attendance at 4 national or international conferences during training e.g. Association of Surgeons of Great Britain and Ireland conference booked as early bird rate as a member	£260 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Association of Surgeons of Great Britain and Ireland	£81 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£22488.50**

Neurosurgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650.00
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724.00
Mandatory for CCT	
FRCS examination (including completion fee)	£2269.00
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354.00
Training and Education Course e.g. RCSEng Training the Trainers	£702.00
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Attendance at 4 national or international conferences during training e.g. Society of British Neurological Surgeons conference booked as early bird rate as an affiliate member	£150 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society of British Neurological Surgeons	£145 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21625.50**

Oral and Maxillofacial Surgery

Requirements	Cost
Essential for Surgical Training	
Bachelor of Dental Surgery e.g. University of Liverpool BDS graduate entry	£9000 for 4 years
JCST fee (for 7 years)	£255 per year of surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
GDC registration (for 9 years)	£890 per year
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Acute Life-threatening Events Recognition and Treatment (ALERT) Course	£95
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Emergency Skills Course e.g. RCSEng Emergency Skills in Oral and Maxillofacial Surgery	£877.50
Basic Plating Course e.g. AO basic OMFS plating course	£499
Head and Neck Anatomy Course e.g. RCSEng basic surgical anatomy of the head and neck	£414
Surgical Dermatology Course e.g. RCSEd Facial aesthetics course	£785
Orthognathic Course e.g. 6th biennial Glasgow course	£495
Microvascular Course e.g. University of Liverpool microvascular course	£1400
Complex/Advanced Trauma Course inc. condylar fractures and orbital access e.g. SORG course	£1500
3 advanced sub-specialty courses:	
e.g. Establishing a modern salivary gland practice	£1250
e.g. Newcastle functional septorhinoplasty and facial plastics cadaveric course	£950
e.g. Controversies in the management of head and neck cancer	£275
National or international conference attendance e.g. BAOMS Conference booked as early bird rate as a member *	£200

Other	
BMA Membership (for 9 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 4 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Oral and Maxillofacial Surgeons	£85 per year for 7 years
Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	£1325
TOTAL ESTIMATE	**£71431.50**

* Where no minimum number of attendances documented a minimum of 1 included

Otolaryngology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
Diploma of Otolaryngology Head and Neck Surgery (DO-HNS)	£932.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Advanced Life Support Course	£550
Advanced Paediatric Life Support Course and 2 x ENT courses	see below
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Temporal Bone Dissection Course e.g. Cuschieri Skills Course	£225
Sinus Anatomy and Surgical Dissection Course e.g. Cuschieri Skills Course	£275
Head and Neck Surgery Course (including LASER) e.g. RCSEd Head and Neck Course Module 1 and 2	£850 and £1050
Septorhinoplasty and Facial Plastics Surgery Course e.g. NSTC Course	£350
Advanced Paediatric Life Support Course	£395
National or international conference attendance e.g. BACO Conference booked as an ENT-UK member *	£825
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. ENT-UK	£210 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£25218.50**

* Where no minimum number of attendances documented a minimum of 1 included

Paediatric Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Paediatric Life Support Course	£395
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Association of Paediatric Surgeons conference booked as early bird rate as a member *	£150
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Paediatric Surgeons	£110 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21640.50**

* Where no minimum number of attendances documented a minimum of 1 included

Plastic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. BAPRAS	£150 per year for 7 years (first year membership free)
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£20561.50**

Trauma and Orthopaedic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Trauma Life Support Course (ATLS)	£650
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Basic Course on Fracture Management e.g. RCPSCG principles of casting for orthopaedic trainees	£20
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Orthopaedic Association conference booked as a member *	Free
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Orthopaedic Association	£152 per year for 2 years as CST, £166 per year for 2 years as ST3-4, £204 per year for 2 years as ST5-6, £240 per year for 2 years as ST7-8
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21405.50**

* Where no minimum number of attendances documented a minimum of 1 included

Urology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 7 years)	£255 per year of surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	£670.50
RCSEng Basic Surgical Skills Course (BSS)	£650
Advanced Trauma Life Support Course (ATLS)	£724
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Urodynamics Course e.g. Belfast Training Academy Course	£187.50
Paediatric Urology Course e.g. BAPU Course	£295
Spinal Injuries Course e.g. Princess Royal Spinal Unit Course	£450
Emergency Urology Course e.g. East of England Emergency Urology Course	£65
Attendance at 1 national or international conference every 2 years of training e.g. British Association of Urological Surgeons Conference booked as early bird rate as a member	£100 per year for 3 years
Other	
BMA Membership (for 9 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 4 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Urological Surgeons	£160 per year for 7 years
Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	£1325
TOTAL ESTIMATE	**£20719**

Vascular Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance per year e.g. Vascular Society Conference booked as a member at early bird rate	£375 per year for 8 years
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Vascular Society	£115 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24135.50**

STROBE Statement for A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract PAGE 1 □
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found PAGE 2-3 □
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported PAGE 5-6 □
Objectives	3	State specific objectives, including any prespecified hypotheses PAGE 6 □
Methods		
Study design	4	Present key elements of study design early in the paper PAGE 7-10 □
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection PAGE 7-10 □
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants PAGE 7-10 □
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable

		PAGE 7-10
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias PAGE 4, 7-10
Study size	10	Explain how the study size was arrived at PAGE 10
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why PAGE 7-10
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding PAGE 10
		(*b*) Describe any methods used to examine subgroups and interactions PAGE 10
		(*c*) Explain how missing data were addressed PAGE 9
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy PAGE 7-10
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed PAGE 10-12 ▯
		(b) Give reasons for non-participation at each stage PAGE 10-12 ▯
		(c) Consider use of a flow diagram N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders PAGE 10-12 ▯
		(b) Indicate number of participants with missing data for each variable of interest PAGE 10-13 ▯
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures PAGE 10-13 ▯
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included PAGE 10-13 ▯
		(*b*) Report category boundaries when continuous variables were categorized PAGE 10-13 ▯
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives PAGE 14-18 ▯
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias PAGE 4 ▯
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence

		PAGE 14-18
Generalisability	21	Discuss the generalisability (external validity) of the study results PAGE 14-18
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based PAGE 19

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE IN THE UK AND IRELAND

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-018086.R1
Article Type:	Research
Date Submitted by the Author:	16-Aug-2017
Complete List of Authors:	O'Callaghan, John; Association of Surgeons in Training Mohan, Helen; Association of Surgeons in Training Sharrock, Anna ; Association of Surgeons in Training Gokani, Vimal; Association of Surgeons in Training Fitzgerald, J; The Association of Surgeons in Training, Williams, Adam; Association of Surgeons in Training Harries, Rhiannon; Association of Surgeons in Training
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Surgery
Keywords:	MEDICAL EDUCATION & TRAINING, SURGERY, HEALTH ECONOMICS, surgical training, cost of training, SURGICAL EDUCATION

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE IN THE UK AND IRELAND

John M O'Callaghan, Helen M Mohan, Anna E Sharrock, Vimal J Gokani, J Edward Fitzgerald, Adam P Williams, Rhiannon L Harries; on behalf of the Council of the Association of Surgeons in Training

Corresponding author: Rhiannon.harries@doctors.org.uk

Address: Association of Surgeons in Training, 35-43 Lincoln's Inn Fields, London WC2A 3PE

http://www.asit.org

http://twitter.com/ASiTofficial @ASiTofficial,

Running head: The cost of surgical training

Category: Original research

Funding: Nil

Keywords: surgical training, cost of training, surgical education, medical education, health economics

Word count: **3809**

Abstract

Objectives:

Applications for surgical training has declined over the last decade and anecdotally, the costs of training at the expense of the surgical trainee are rising. We aimed to quantify the costs surgical trainees are expected to cover for postgraduate training.

Design:

Prospective, cross-sectional questionnaire based study.

Setting/Participants:

A non-mandatory online questionnaire for UK-based trainees was distributed nationally. A similar national questionnaire was distributed for Ireland, taking into account differences between the healthcare systems. Only fully completed responses were included.

Results:

There were 848 and 58 fully completed responses from doctors based in the UK and Ireland, respectively. Medical students in the UK reported a significant increase in debt on graduation by 55% from £17,892 (2000-2004) to £27,655 (2010-2014), $p<0.01$. 41% of specialty trainees in the UK indicated that some or all of their study budget was used to fund mandatory regional teaching. By the end of training, a surgical trainee in the UK spends on average £9,105 on courses, £5,411 on conferences and £4,185 on exams, not covered by training budget. Irish trainees report similarly high costs. Most trainees undertake a higher degree during their postgraduate training. The cost of achieving the mandatory requirements for completion of training ranges between £20,000-£26,000 (dependent on specialty), except oral and maxillofacial surgery, which is considerably higher (£71,431).

Conclusions:

Medical students are graduating with significantly larger debt than before. Surgical trainees achieve their educational requirements at substantial personal expenditure. To encourage graduates to pursue and remain in surgical training, urgent action is required to fund the mandatory requirements and annual training costs for completion of training and provide greater transparency to inform doctors of what their postgraduate training costs will be. This is necessary to increase diversity in surgery, reduce debt load and ensure surgery remains a popular career choice.

Strengths and Limitations of this Study

- This national study provides a large cross-sectional data set on the experience of the costs of surgical training by surgical trainees across all ten surgical specialties in the UK and Ireland
- The costs analysed provided a comprehensive overview of the breadth and depth of financial costs incurred by trainees.
- The wide-distribution of the survey and breadth of responses increased the likelihood that it is representative of trainee experience.
- We recognise that there is a significant number of surveys excluded due to incompletion, which we believe to be related to the need for accurate costings to compete the survey. However, the overall number of completed responses was higher than required to power the study.
- It is recognised that some costs could be subject to recall bias or an element of selection bias, in that those with significantly more debt may be more likely to respond, however the figures reported are largely consistent with the calculations we have made using the current prices of exams, courses and society memberships to verify the results.

Introduction

The number of trainees applying for surgical training has declined over the last decade[1]. Many factors including low workforce morale, poor work-life balance and recent contractual issues may act as a deterrent to medical students considering a career in surgery[2]. The cost of completing the mandatory postgraduate requirements to secure a higher surgical training programme post has been estimated to be between £2,735 and £20,780, dependent on surgical specialty (average £3,360) compared with medicine £2,815 and anaesthetics £2,215[3]. Following entry to higher surgical training, there are considerable ongoing costs incurred by trainees in order to meet the requirements for completion of training as mandated by the Joint Committee on Surgical Training (JCST). These include educational courses, conference attendance, Royal College membership and fellowship examinations and annual subscriptions, and specialty society membership subscriptions. In addition, trainees pay annual expenses such as registration with the respective regulatory bodies, the UK General Medical Council (GMC) or Irish Medical Council (IMC), medical indemnity insurance costs, and the JCST fee (paid by trainees in the UK).

In 2007, The Association of Surgeons in Training (ASiT) conducted a survey of UK surgical trainees, to assess the financial costs to trainees in surgical training[4]. The results demonstrated that the mean debt on qualification from medical school was over £20,000. However, in recent years there have been many new challenges facing the current generation of surgical trainees, including increased student debt, secondary to a rise in annual university tuition fees of up to £9,000 per annum[5]. It has previously been calculated that medical students graduating currently are unlikely to repay their student loan debt before reaching the 30-year point at which it is written off[6]. The salaries of male and female medical graduates diverge such that by the age of 55, the average male medical school

graduate earns 35% more[6]. This means that the average female graduate repays more when debt is low, but a lower amount when debt is high, compared to male graduates[6]. The cost of living has also increased; in the ten years, preceding November 2016 the UK Consumer Price Index (CPI) rose a total of 23.8%[7].

To assess the current situation, we repeated a refined study, with a broader remit and more in depth assessment of cost pressures on trainee surgeons in both the UK and Ireland. The main aim was to assess the true financial cost of training to the surgical trainee in each of the ten surgical specialties.

Methods

Participants and setting

Postgraduate surgical training in the UK and Ireland consists of a minimum of 8 years of training (except for oral and maxillofacial surgery (OMFS) and urology which is a minimum of 7 years) following completion of the initial post-qualification two-year Foundation Programme (or intern year in Ireland) **Figure 1**. Competitive entry occurs prior to both Core and Higher specialist training levels, except for neurosurgery, cardiothoracic surgery and Oral and maxillofacial surgery (OMFS) in the UK (and trauma and orthopaedics in Scotland), where 'run-through' training (no separate selection process between core and higher specialist training) from Core level exists. Core surgical knowledge is assessed by the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination and specialty specific knowledge during the later phase of higher surgical training is assessed by the Intercollegiate Fellowship of the Royal College of Surgeons (FRCS) examination.

In the UK and Ireland, the Joint Committee on Surgical Training (JCST) are responsible for curriculum development and quality assurance of all the surgical training programmes in the ten defined surgical specialities (cardiothoracic surgery, general surgery, neurosurgery, OMFS, otolaryngology, paediatric surgery, plastic surgery, trauma and orthopaedics, urology and vascular surgery). All surgical trainees are required to register with the JCST and to pay an annual fee (£255 at time of submission) that has more than doubled between 2010 and 2016. This fee supports the running costs of the JCST to manage trainee enrolment and recommendation for certification; the work of each of the ten surgical specialties 'Specialty Advisory Committee' (SACs); curriculum review and development and website support. The

JCST training fee is covered for trainees in Ireland directly by funding received by the RCSI from the Health Service Executive (HSE).

In the UK, Local Education Training Boards (LETBs) provide funding to Local Education Providers (essentially the hospital where a trainee is employed) to cover the direct costs of delivering education and training. This sum includes two components: firstly, salary support of 50% of each doctor's basic salary; the second component is a placement fee of £12,400 per year, per trainee, to fund all costs involved in delivering education and training needs. It is from this placement fee that trainees apply for study funding support towards courses and conferences essential to their training, often referred to as 'study leave budget', with a restricted amount available dependent on the LETB. Funding for military trainees in the UK regular Defence Medical Services (DMS) is overseen by External Education and Training Support (EETS) within the Defence Deanery. Funding for training courses for military trainees is therefore at the discretion of the Defence Consultant Advisor and Defence Deanery[8]. In Ireland, the RCSI receives funding from HSE to provide surgical training, which covers the cost of the JCST fee, delivering the curriculum, human factors and operative skills training days. However, other elements essential for CCT (Certificate of Completion of Training) are not directly provided. More details of funding for Irish trainees is given in **Appendix 1**.

At the time of survey distribution, there were 5,323 surgical trainees in the UK and 438 surgical trainees in Ireland[9].

Questionnaire design and distribution

A novel 54-item, survey tool was developed, consisting of free-text, binomial and variable scale responses. The questionnaire was designed with reference to previously published guidelines on conducting questionnaire research[10-12]. The online platform *SurveyMonkey®* (Palo Alto, CA, USA, www.surveymonkey.com) was used to build the survey. All individual question items were compulsory. No individually identifiable information was collected; therefore, non-responders could not be identified for follow-up. No incentives were offered for participation. A link to the online survey was distributed to members of ASiT, surgical specialty associations, and local and national mailing lists of surgical trainees. All surgical trainees in the UK including foundation doctors were included, as appropriate to the level of analysis. A modified version of the survey was circulated to ASiT members and surgical trainees in Ireland, which reflected relevant differences in health systems and training. Interns were excluded from distribution of the survey in Ireland as contact details were only available for those registered as surgical trainees with RCSI. Data collection took place from 2nd December 2015 to 26th April 2016. The ethical dimensions of this non-mandatory, anonymous evaluation survey were considered and no concerns were identified. Participants consented to the use of the analysis, distribution and publication of anonymised grouped results. A copy of the survey can be found in **Appendix 2.**

This study was undertaken by ASiT (http://www.asit.org), a pan-surgical specialty professional body and registered charity in the UK (no: 274841) working to promote excellence in surgical training for the benefit of junior doctors and patients alike. ASiT is

independent of the National Health Service (NHS), Surgical Royal Colleges, and specialty associations.

Data analysis

Only fully completed questionnaires were included in the analysis. Due to the differing healthcare structures and funding systems of postgraduate education and training in UK and Ireland, a modified version of the survey was used for Ireland and the results are presented separately. Military trainees were excluded due to low numbers and a separate training funding structure. Data was graphed and analysed in *Excel®* (Microsoft, USA). Significance testing for continuous variables was conducted using Mann-Whitney U Test in *Stata®* (Statacorp, USA); statistical significance was accepted at $p<0.05$. Survey sample size calculations were based on standard published formulae and assuming a population of 6000 individuals, with alpha=0.01, 209 responses would be sufficient for margin of error of 0.03[13]. For readability, all values are presented to the nearest pound (£) or euro (€). We have used the exchange rate as accessed on 13th January 2017 of £0.87= €1.00 to provide comparisons between the two currencies[14]. The study results are reported in concordance with STROBE guidance on observational studies[15]. Results regarding costs are presented displaying trainees year of graduation in blocks of 5 years to show trends over time.

Costs of CCT to the trainee in each surgical specialty

Using guidance available from the JCST the total cost of achieving the mandatory and desirable requirements for CCT in each of the surgical specialties was also calculated. Where conference attendance was mandated, but no exact minimum number described, the cost of at least one attendance during the training period was calculated. For courses which

required re-validation at the end of training, the reduced course cost of re-validation rather than a full attendance was used. Course costs from recognised bodies, such as the BMA and Surgical Royal Colleges, were used in all calculations, where applicable. Conference costs were calculated using the reduced rates available to society members or early registrations where possible.

Results

Of 1603 surveys submitted, a total of 868 fully completed responses were included in the analysis from doctors based in the UK, and 58 fully completed responses from doctors based in the Republic of Ireland. Respondent demographics by country of work are detailed in **Table 1.**

United Kingdom-specific responses

For the purposes of monetary analysis UK military doctors (n=20) were excluded from the main analysis, however a summary of military doctors' survey findings can be found in **Appendix 3**. This resulted in a total of 848 respondents for analysis. Of 848 respondents, 751 (88%) graduated from medical school in the UK. 89% (672) of these UK medical school graduates graduated with debt, with a mean of £25,404. The average debt by year of graduation has increased by 55% from £17,892 to £27,655 comparing graduates in the most recent generation (2010-2014) with those graduating between 2000 and 2004 ($p<0.01$) **Figure 2**.

There were 659 specialty trainee respondents from the UK (grades CT/ST1 to ST8) **Table 2**. Of these, 93% (618) responded that they were currently entitled to a study leave budget. The median value was £600 per annum (range £500-£835). Three LETBs reported no defined budget limit (Yorkshire and Humber, South West and Thames Valley). 41% of all respondents in specialty training indicated that some (31% of respondents) or all (10% of respondents), of their study budget was used to fund mandatory regional teaching.

By the end of training, a surgical trainee in the UK can expect to have spent on average £9,105 on courses, £5,411 on conferences and £4,185 on exams (£18,701) that they have

not been reimbursed through any source. Expense per year on conferences has marginally increased from £331 to £414 comparing older graduates with the more recent generation (2000-2004 versus 2010-2014, p=0.28). However, course expenses per year have increased significantly; the most recent graduates from medical school, graduating in the years 2010-2014, have spent on average £1,311 per year. This is an increase of 121% on the annual amount spent by medical school graduates graduating between 2000 and 2004 (p<0.01) **Figure 3**.

400 respondents (47%) from the UK have undertaken a postgraduate degree since graduating from medical school, with this proportion rising by the later stages of training (ST7-8 and post-CCT fellow) to 68% (96/141). The average cost of the degree, including university fees and loss of earnings was estimated by respondents at £18,009; with an MD/PhD being the most popular higher degree completed (24.8%, mean cost £27,882), followed by MSc (21.3%, mean cost £11,090).

732 respondents from the UK (86%) and 340 of 349 trainees level ST3-ST8 (97%) pay an annual subscription to one of the four surgical royal colleges (mean £305 for all trainees, mean £386 for ST3-ST8). 700 respondents (82%) pay annually to their SAC-defined specialty society (mean £343) and 672 (79%) are members of the British Medical Association. Over the last year, the mean amount spent on journals was £72 and on textbooks was £212.

Ireland-specific responses

Of the 58 respondents, 57 were currently working in Ireland and one was on fellowship in the USA **Table 1 and Table 3**. 25 (43%) reported that they were currently entitled to a training fund **Appendix 1**. In the past year, trainees spent on average £1278 (€1469) on mandatory courses, including travel expenses to courses, many of which are outside of

Ireland, of which a mean of £784 (€902) euros was not reimbursed. Trainees spent a mean of £1,977 (€2,321) on non-mandatory courses, of which a mean of £1,850 (€2,164) was not reimbursed. In the past year, respondents had spent a mean of £1,153 (€1,353) on attending conferences, of which a mean £1,005 (€1,183) was not reimbursed. Since graduation, across all grades trainees had spent a mean £4,829 (€5,669) on examinations, of which a mean £3,402 (€4,004) was not reimbursed. For senior trainees (ST8), an average £9,796 (€11,500) had been spent on exams, of which £5,396 (€6,351) was not reimbursed.

47 respondents (n=81%) from Ireland had undertaken a post-graduate degree since graduating from medical school. The MCh was the most popular post-graduate degree (n=15, 26%), followed by the MSc (n=13, 22%) and MD (n=11, 19%).The average estimated total monetary cost of undertaking a postgraduate degree to the trainee, including course fees and loss of income, was £22,093 (€25,936).

Estimated costs of training (UK and Ireland) using CCT essential and desirable criteria

The costs range between £20,000 (€23,479) to £26,000 (€30,523) depending on surgical specialty, except OMFS, which is considerably higher (£71,431 or €83,858) due to the dual qualification in medicine and dentistry as well as having significantly more mandatory training courses than other specialties **Appendix 4**.

Only the minority of the costs are tax deductible, add to this the estimated cost of a postgraduate degree (£18,009 or €21,142), which many surgical trainees will also undertake at their own expense, and the estimated costs to the trainee increase to approximately £40,000 (€46,958, excluding OMFS).

Discussion

This study has shown that individual doctors incur many thousands of pounds in personal expense after graduating from medical school to pursue a career as a surgeon and to meet the requirements to complete surgical training. These costs are incurred in addition to the significant debt built up by most medical school graduates, a debt burden likely to rise further as a greater proportion of students graduate under increased student tuition fees in the UK. Many of the costs paid by the trainee towards their training are not recognised as tax deductible, yet are incurred to cover requirements that are essential to progress through training schemes, and therefore to maintain one's livelihood. Consultant surgeons-to-be now spend considerably more per year on courses than in the past, and these now represent the single largest training cost, according to our results. Efforts to make surgery an attractive and inclusive career must include an equitable distribution of training costs to the trainee.

Individual trainees spend significant amounts on courses that are not actually mandatory as documented in CCT requirements. We speculate there are two reasons for this; firstly, surgical trainees will undertake courses above and beyond the minimum requirements to develop their skills. Gaps in knowledge and experience delivered in current training posts are likely to contribute to this, such that simulation courses are necessary to address training needs. As such, issues with training programmes failing to meet trainee's educational needs are instead transferred to trainees, who still obtain this necessary training at their own cost. Secondly, to be competitive for higher surgical training and for consultant posts, trainees may undertake additional courses and extracurricular activities.

We have identified a regional variation in what amount is available to trainees, despite the standardised placement fee from the LETB. Study budgets for specialty trainees were lower than the values released in response to the recent FOI request by Varley *et al* in 7 out of 10 LETBs (North Central, South and North West London, North West England, East of England, Kent Surrey and Sussex and North East England), and equal in three LETBs (East Midlands, Wales, West Midlands)[16]. It is desirable that study budgets are standardised across the UK, in both amount and that they should not be top-sliced to provide mandatory regional teaching, and in the longer term all items deemed essential for CCT (including the JCST fee), should be funded directly, without expense to the trainee. ASiT has previously highlighted this issue of uncontrolled geographical variation, calling for an equitable approach through national standardisation[17].

Irish trainees bear similar high costs in surgical training to their UK counterparts, not surprisingly given that JCST requirements are the same. The higher cost of courses for Irish trainees may reflect increased travel and accommodation expenses, as many courses require travel outside of Ireland and the exclusion of Irish interns from the study, who are less likely to have undertaken expensive technical skills courses. The higher cost of exams may reflect in part a higher proportion of Irish trainees who undertake USMLE examinations to pursue a fellowship in the USA, as well as increased travel expenses to intercollegiate examinations often held in the UK. While funding is available to reimburse some of these expenses, it falls short of being sufficient to avoid trainees bearing the greatest burden of the cost. These costs are on top of annual mandatory costs such as membership or fellowship of RCSI. These are a significant additional cost- for example, the 2016/2017 subscription rate is £315 (€370) for fellows and £226 (€265) for members), and the annual

Irish Medical Council(IMC) retention fee (£477 (€560) for those registered for less than 3 years and £515 (€605) for those registered for more than 3 years). Of note, the payment for the Irish Medical Council (IMC) is an annual payment and cannot be split across the year which places a significant financial burden on trainees at the time of the year when they move jobs and incur considerable additional expenses.

68% of later stage higher surgical trainees in the UK and 81% of Irish trainees report obtaining a higher degree. This was associated with an average cost estimated by respondents of over £18,000 and £22,000 in the UK and Ireland, respectively. Whilst it is not deemed mandatory by the JCST to undertake a higher degree within surgical training, there are a number of reasons why surgical trainees choose to undertake one. Firstly, it is required in order to practice as an academic consultant surgeon, and secondly, a significant proportion of trainees will undertake one in order to make themselves competitive for consultant appointment.

Doctors need to be aware in advance of what their chosen pathway is likely to cost them, alongside the starting salary for consultant posts when they complete their training (ranging from £76,761 in the UK and £95,775 (€105,000) in Ireland[18,19]). This study has provided the most detailed assessment yet for both UK and Irish surgical trainees. It is difficult to compare the costs to other medical specialties as few similar studies have been undertaken in other disciplines. One calculation for the training costs towards the completion of CCT in Obstetrics and Gynaecology estimated slightly less than for surgical trainees, at £14,224[20]. Another calculation for only the early stages of training in other specialties was also slightly less for medicine and anaesthetics, than surgical specialties[3]. Comparisons to other professional careers, such as solicitors, are also difficult, but working in the private sector

has additional benefits. After qualifying with a law degree, solicitors must complete a Legal Practice Course (LPC), which costs £8,500-£15,000 dependent on type of course and location[21]. It is however possible to have this cost covered by a law firm if obtaining a training contract in advance, and many law firms will also provide a living expense grant of several thousand pounds per year[22].

Research by the University of Kent for the Department of Health has provided cost-estimates for the training of various doctor grades from the start of medical school onwards[23]. This work found that the total cost of training a consultant was £564,112, with some contributions that came largely from the individual (such as undergraduate university fees, lost earnings, and postgraduate training fees) and others that came predominantly from the state (clinical placement, tuition and replacement)[23]. It is not possible from the document to disentangle the values independently contributed by each party.

An important consideration frequently overlooked in these analyses relates to the hospital activity performed by trainees generating hospital income. Doctors in training have a value as well as a cost, which should be taken into account to offset such cost-estimates. Two UK-based studies have sought to quantify this within surgical training[24,25]. In general surgery, an analysis of 1,184 out-patient clinic consultations demonstrated that trainees delivered a quarter of all out-patient related income, averaging £36,452 per trainee[24]. This was sufficient to offset 95% of the trainee's average basic salaries. Within ENT surgery, clinical activity undertaken by SHO grade doctors was calculated to generate an annual net income of £73,048 (4.3 times higher than their employment costs)[25]. Registrars generated an annual net income of £121,587 (5.4 times their employment cost). In total, 94% of trainees included in this analysis generated more hospital income than their employment costs.

Given the benefit derived from hospitals from trainee-related clinical activity, it is reasonable that a proportionate amount of the associated costs of training should be borne by the employing hospitals.

The costs analysed in this study present a comprehensive overview of the breadth and depth of costs incurred by trainees. The survey was widely distributed across regions, specialties and grades, increasing the likelihood that it is representative of trainee experience. Future studies should seek to understand the balance of costs incurred by the health system in supporting training, which are poorly understood, the influence of training cost on career choice, and wider international comparisons on the costs of training in different health systems.

Conclusions

Medical students are graduating with increasing debt. Surgical trainees achieve their educational requirements through considerable personal expenditure, with a total estimated monetary cost to the trainee in the region of £40,000 (€47,000). The Certificate of Completion of Training in surgical specialties comes with significant costs, which until now have not been accurately estimated. The cost goes far beyond the national training fee paid to the JCST annually in the UK, and greater transparency is immediately necessary to inform doctors of what their postgraduate training costs will be across all specialties. We strongly believe that the costs of mandatory surgical training should be covered by the Local Education and Training Boards, including the JCST fee and the costs of achieving CCT mandatory requirements. Furthermore, funding should be made available for non-mandatory surgical educational activity deemed beneficial by the trainee's educational supervisor, to ensure surgeons are trained to the highest level to provide excellent care. This is necessary to increase diversity in surgery, reduce debt load and make surgery a popular career choice again.

Acknowledgements

We thank all those trainees who took the time to complete the survey. We acknowledge the work done by Edward Fitzgerald and Charles Giddings on the previous 2007 costs of surgical training survey.

Contributors

RLH and JEFF conceived the study. All authors designed the questionnaire. JMOC collected the data. JMOC, HMM and RLH analysed the data. All authors were responsible for compiling and editing the manuscript, and approving the final article.

Competing interests

The authors are either current or previous surgical trainees, and current or past elected members of the Council of the Association of Surgeons in Training (Registered Charity No. 274841). JEFF is an employee of KPMG Global Health Practice, Honorary Clinical Advisor to the Lifebox Foundation charity, and a Trustee of the SURG Foundation research charity. The authors have no other relevant financial or personal conflicts of interest to declare in relation to this paper.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data sharing statement

Summary data is available from the corresponding author at president@asit.org. Consent to data sharing was sought prior to survey completion, and the presented data are anonymised grouped, hence risk of individual identification is low.

Table 1. Basic Demographics. Respondents divided by country of work.

Demographic	United Kingdom	Ireland
Number	848	58
Male: Female (%)	518:327 (61.3:38.7, 3 NR)	35:23 (60:40)
Mean Age (years)	31.6 (range 23-55)	31.3 (range 25 to 41)
LTFT Trainees (%)	36 (4.3)	0
Academic Trainees (%)	69 (8.1)	N/A

NR= Not Reported, LTFT= Less than full time training

Table 2. Specialty, stage of training and LETB (Local Education and Training Board) for respondents from UK.

Which specialty do you intend to pursue?	What is your stage of training?	In which LETB/Deanery do you work?
Cardiothoracic Surgery: 32 (3.8%) General Surgery: 296 (34.9%) Neurosurgery: 28 (3.3%) Oral and Maxillofacial: 19 (2.2%) Otolaryngology: 75 (8.8%) Paediatric Surgery: 29 (3.4%) Plastic Surgery: 66 (7.8%) Trauma and Orthopaedics: 172 (20.3%) Vascular Surgery: 59 (5.4%) Urology: 59 (7.0%) Other/Unsure: 26 (3.1%)	Foundation Year 1: 12 (1.4%) Foundation Year 2: 63 (7.4%) ST1/CT1/SHO1: 148 (17.5%) ST2/CT2/SHO2: 96 (11.3%) CT3/SHO3: 10 (1.2%) ST3/SPR1: 78 (9.2%) ST4/SPR2: 59 (7.0%) ST5/SPR3: 77 (9.1%) ST6/SPR4: 59 (7.0%) ST7/SPR5: 60 (7.1%) ST8/SPR6: 67 (7.9%) Post CCT: 17 (2.0%) Clinical Fellow: 35 (4.1%) Research Post:53 (6.3%) Other: 14 (1.7%)	Scotland: 70 (8.3%) Northern Ireland: 49 (5.8%) Wales: 51 (6.0%) North East: 42 (5.0%) North West: 80 (9.4%) Yorkshire and Humber: 55 (6.5% East Midlands: 51 (6.0%) West Midlands: 70 (8.3%) East of England: 61 (7.2%) Thames Valley: 41 (4.8%) Kent, Surrey and Sussex: 41 (4.8%) Wessex: 41 (4.8%) South West: 61 (7.2%) North East and Central London: 43 (5.1%) North West London: 44 (5.2%) South London: 46 (5.4%)

CT= Core Training, NCE = North Central and East London, SPR= Specialist Registrar, ST= Specialist Training.

Table 3. Specialty and stage of training for respondents from Ireland.

Which specialty do you intend to pursue?	What is your stage of training?
Cardiothoracic Surgery: 2 (3%) General Surgery: 22 (38%) Neurosurgery: 1(2%) Oral and Maxillofacial: 0 Otolaryngology: 2 (3%) Paediatric Surgery: 0 Plastic Surgery: 3(5%) Trauma and Orthopaedics: 20(34%) Vascular Surgery: 2(3%) Urology: 6 (10%)	ST1/CT1/SHO1: 13 (22%) ST2/CT2/SHO2: 10 (17%) ST3/SPR1: 12 (21%) ST4/SPR2: 5 (9%) ST5/SPR3: 4 (7%) ST6/SPR4: 2 (3%) ST7/SPR5: 1 (2%) ST8/SPR6: 3 (5%) Clinical Fellow: 1 (2%) Research Post: 1 (2%)

CT= Core Training, SPR= Specialist Registrar, ST= Specialist Training.

References

1. Joint Committee on Surgical Training National Selection Leads Group, Verbal Communication 2016.

2. Jaunoo SS, King TR, Baker RF, Adama HL. A national survey of reasons why students and junior doctors choose not to pursue a career in surgery. Annals of the Royal College of Surgeons 2014;**96 (Suppl)**:192-94

3. Stroman L, Weil S, Butler K, McDonald C. The cost of a number: can you afford to become a surgeon? The Bulletin of the Royal College of Surgeons of England 2015;**97**(3):107-11 doi: 10.1308/147363515x14162390057944[published Online First: Epub Date]|.

4. The Cost of Surgical Training, Position Statement. London, UK: Association of Surgeons in Training, 2007.

5. Student Loans in England: Financial Year 2015-16. Glasgow, UK: The Student Loans Company, 2016.

6. Ercolani MG, Vohra RS, Carmichael F, Mangat K, Alderson D. The lifetime cost to English students of borrowing to invest in a medical degree: a gender comparison using data from the Office for National Statistics. BMJ open 2015;**5**(4):e007335 doi: 10.1136/bmjopen-2014-007335[published Online First: Epub Date]|.

7. Statistical bulletin: UK consumer price inflation: Nov 2016: Office for National Statistics, 2016.

8. Defence healthcare education and training (DHET)- Applications polic for defence medical services (DMS) external education and training, 4-6-3. 1.2 ed. Joint Services Publication, 2014.

9. Joint Committee on Surgical Training and Royal College of Surgeons in Ireland, Verbal Communication.

10. Jones TL, Baxter MA, Khanduja V. A quick guide to survey research. Annals of the Royal College of Surgeons of England 2013;**95**(1):5-7 doi: 10.1308/003588413x13511609956372[published Online First: Epub Date]|.

11. Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). Journal of medical Internet research 2004;**6**(3):e34 doi: 10.2196/jmir.6.3.e34[published Online First: Epub Date]|.

12. Woodward CA. Questionnaire construction and question writing for research in medical education. Medical education 1988;**22**(4):345-63

13. JE B, JW K, CC H. Organizational research: determining appropriate sample size in survey research. Information Technology, Learning and Performance Journal 2001;**19**(1):43-50

14. ECB. Euro foreign exchange reference rates: European Central Bank, 2017.

15. von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet (London, England) 2007;**370**(9596):1453-7 doi: 10.1016/s0140-6736(07)61602-x[published Online First: Epub Date]|.

16. Varley I, Kumar A. Cost of training in oral and maxillofacial surgery: beyond the second degree. The British journal of oral & maxillofacial surgery 2016;**54**(8):956-58 doi: 10.1016/j.bjoms.2016.06.006[published Online First: Epub Date]|.

17. Fitzgerald JE, Giddings CE, Khera G, Marron CD. Improving the future of surgical training

and education: consensus recommendations from the Association of Surgeons in Training. International journal of surgery (London, England) 2012;**10**(8):389-92 doi: 10.1016/j.ijsu.2012.03.012[published Online First: Epub Date]|.

18. British Medical Association. Pay scales for Consultants. 2017. https://www.bma.org.uk/advice/employment/pay/consultants-pay-england

19. Health Service Executive. April 1st 2017 Revised Consolidated Payscales. http://www.hse.ie/eng/staff/benefitsservices/pay/Consolidated-Payscales-1st-April-2017.pdf

20. Orr K, Smith M. The financial burden of specialty training. BMJ Careers 2016;**353**(8063):542

21. Costs of qualifying. Secondary Costs of qualifying 2017. http://www.lawsociety.org.uk/law-careers/becoming-a-solicitor/costs-of-qualifying/.

22. TargetJobs- Law. 2017.

23. Curtis L, Burns A. Unit costs of health and social care 2016: Personal social services research unit, University of Kent, 2016.

24. Fitzgerald JE, Ravindra P, Lepore M, Armstrong A, Bhangu A, Maxwell-Armstrong CA. Financial impact of surgical training on hospital economics: an income analysis of 1184 out-patient clinic consultations. International journal of surgery (London, England) 2013;**11**(5):378-82 doi: 10.1016/j.ijsu.2013.02.017[published Online First: Epub Date]|.

25. Clamp PJ, Malpas G, Mason KA, Giddings CE. Surgeons in training – a financial burden or benefit to NHS trusts? Ann R Coll Surg Engl (Suppl) 2011;**93**:22-24

Figure 1. Stages and years of training for UK doctors training to be consultant surgeons. Foundation Doctor Year 1 is the first stage following graduation from university/medical school. In Ireland, the Intern Year is the equivalent of the Foundation Doctor stage in the UK.

Figure 2. Mean debt on graduation from medical school, UK medical schools only. Debt has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), $p<0.01$.

Figure 3. Mean expense per year on courses and conferences that trainees have not been reimbursed. Trainees grouped into 5- year generations by year of graduation. Expense on courses has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), $p<0.01$. Expense on conferences has not significantly increased ($p=0.28$). UK medical school graduates only.

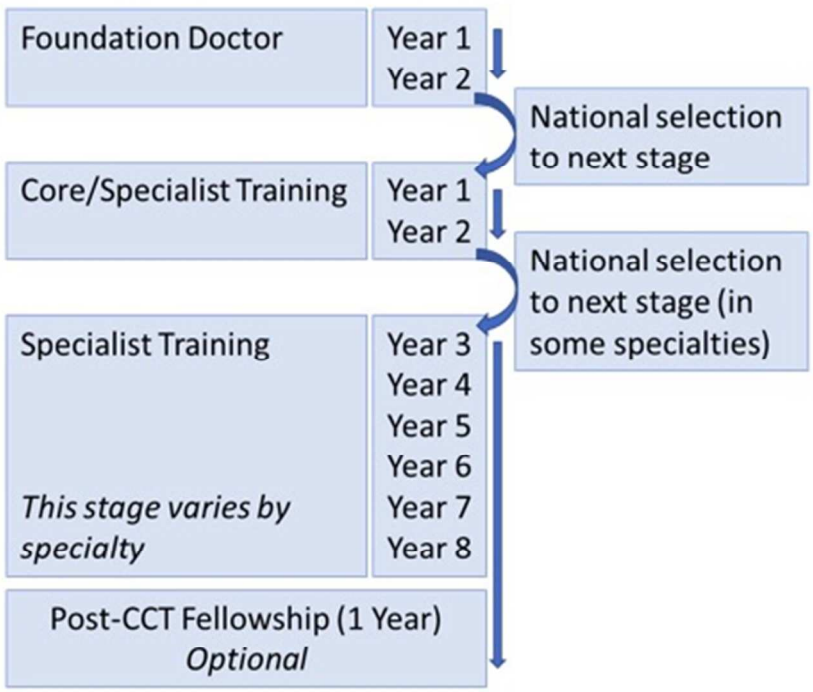

Figure 1. Stages and years of training for UK doctors training to be consultant surgeons. Foundation Doctor Year 1 is the first stage following graduation from university/medical school. In Ireland, the Intern Year is the equivalent of the Foundation Doctor stage in the UK.‼ ┼

44x34mm (300 x 300 DPI)

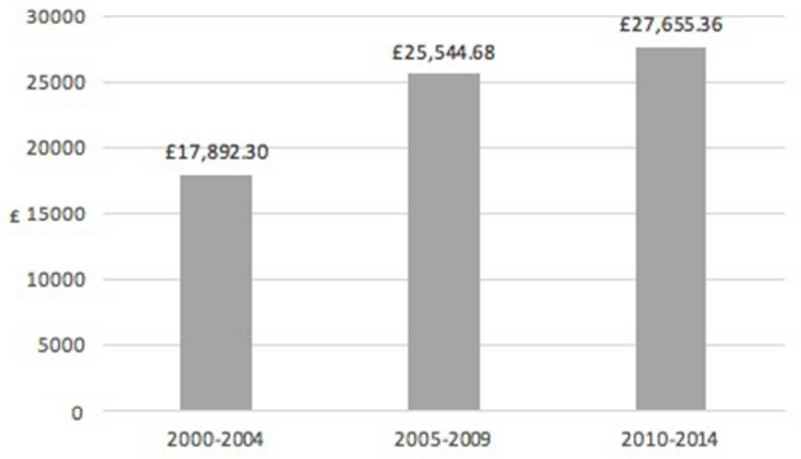

Figure 2. Mean debt on graduation from medical school, UK medical schools only. Debt has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01.‼ †

42x25mm (300 x 300 DPI)

Figure 3. Mean expense per year on courses and conferences that trainees have not been reimbursed. Trainees grouped into 5- year generations by year of graduation. Expense on courses has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01. Expense on conferences has not significantly increased (p=0.28). UK medical school graduates only.‼ ┼

43x21mm (300 x 300 DPI)

Appendix One: Sources of Funding for Higher Surgical Trainees in Ireland

In Ireland, as the RCSI directly administers surgical training in Ireland, it receives funding from the HSE to provide surgical training. This includes covering the cost of the JCST fee and delivering the curriculum, including human factors and operative skills training days. However, other elements essential for CCT such as a leadership course, train the trainers course and good clinical practice are currently not directly provided. There are three funding streams available to trainees on higher specialist training, equivalent to the UK "study budget"- the current funding available to HST trainees are:

1. Mandatory Fund- this is provided by the HSE/NDTP and administered by RCSI. It provides funding of up to 1500 euros for approved mandatory courses while in full-time training in Ireland. This fund does not carry forward year on year and cannot be used if for example, on an overseas fellowship. However, its scope is limited as only approved mandatory courses are funded (1).
2. Specialist training fund- this is a fund of 500 euros per year, which accumulates over the course of HST. It can be used for course fees, equipment costs and books etc. It excludes time spent out of full time training, e.g. on an overseas fellowship (1).
3. There is an additional clinical courses and exams fund, where trainees can claim 450 euros for exams or courses on a definitive list of those deemed relevant to the speciality. This includes a narrow list, for example Advanced Trauma Life Support (ATLS). For exams undertaken outside of Ireland, 650 may be claimed. This is directly administered by the HSE/MET (2). The fund will only cover the cost once per trainee per examination.

At the time of this survey, many trainees would have spent time prior to commencing HST completing courses to make themselves competitive to apply for HST at considerable personal cost. In addition, the range of courses covered by the above list currently excludes many courses undertaking by trainees in their surgical training.

It is worth noting that the fund does not adequately cover the cost of courses. For example, the clinical course and examination refund scheme will cover ATLS if undertaken in Ireland. The current cost of ATLS is 875 euros, but the scheme will only cover 450 euros. This does not include travel and accommodation costs to regional centres to complete the course. Similarly, for membership and intercollegiate examinations, this fund does not fully cover the cost, and as these are often held in the UK there are additional travel and accommodation expenses.

References Appendix 1:

1. RCSI Training Funds for SpR Trainees. http://rcsi.ie/files/surgery/docs/20161019040654_Funding-Information-2016.pdf Accessed 16th January 2017
2. HSE-National Doctors Training and Planning. Specialist Training Fund Guidance Document. July 2016.

Cost of Surgical Training Survey 2015

1. Introduction

This survey aims to quantify the additional costs incurred by surgeons in training in pursuit of their career goals. It also aims to quantify the availability of study budgets to cover the required courses and other training needs.

A similar survey was conducted by ASiT in 2007 and we aim to give some comparison of changes over time.

The results will be freely disseminated, including through publication and on the trainee association websites, and provided to Political Leaders, the Royal Colleges, JCST and Specialty Associations.

Completion indicates your consent for this analysis, distribution and publication of anonymised, grouped results. Individual responses remain anonymous.

This survey is for ALL TRAINEES, REGARDLESS OF SURGICAL SPECIALTY in the UK and Republic of Ireland. Students are not included.

It takes approximately 10 minutes to complete.

For more information:

www.asit.org
info@asit.org
@ASiTofficial

Cost of Surgical Training Survey 2015

2. In which country do you work?

* 1. Where do you work currently?

- ○ United Kingdom
- ○ Republic of Ireland
- ○ Other

Other (please specify)

Cost of Surgical Training Survey 2015

3. Pay

* 2. What is your current basic salary (without overtime, to the nearest euro)?
Please do not enter commas or symbols into any boxes relating to numerical values.

To remind you, current payscales are:

Intern € 30257
Senior House Officer
1 € 38839
2 € 40998
3 € 44224
4 € 46334
5 € 50578
6 € 52687
7 € 54746
Registrar
1 € 50578
2 € 52687
3 € 54746
4 € 56260
5 € 58279
6 € 60305
Senior Registrar
1 € 65000
2 € 65000
3 € 65620
4 € 67682
5 € 70061
6 € 72540
7 € 75097
Specialist Registrar
1 € 60404
2 € 61855
3 € 63953
4 € 65000
5 € 66070
6 € 68980
7 € 71878

* 3. What is your current average monthly take home pay after tax (to the nearest euro)?

4. Are you getting paid for your overtime?

- [ ] Yes- rostered only- all of it
- [ ] Yes- rostered only-some of it
- [ ] Yes- rostered and unrostered- all of it
- [ ] Yes-rostered and unrostered- some of it
- [ ] No

* 5. Are you currently entitled to a training fund? (e.g. the SpR mandatory training fund or specialist training fund?)

- [ ] Yes
- [ ] No

Cost of Surgical Training Survey 2015

4. Demographics

* 6. Are you a military trainee?

- Yes
- No

7. What is your gender?

- Male
- Female

* 8. What is your age? (years)

Cost of Surgical Training Survey 2015

5. Current Post

* 9. Do you currently hold an academic post?

- Yes
- No

* 10. Are you in Less Than Full Time Training?

- Yes
- No

11. Are you currently on leave?

- Yes- Maternity/Paternity leave
- Yes- Other leave
- No

* 12. Which specialty do you intend to pursue?

- Cardiothoracic surgery
- General Surgery
- ENT
- Neurosurgery
- Oral and Maxillofacial surgery
- Paediatric Surgery
- Plastic Surgery
- Trauma and Orthopaedics
- Vascular Surgery
- Urology
- Other (please specify)

* 13. What is your current grade?

- F1 or Intern
- F2
- ST1/CT1/SHO1
- ST2/CT2/SHO2
- CT3/SHO3
- ST3/SpR1
- ST4/SpR2
- ST5/SpR3
- ST6/SpR4
- ST7/SpR5
- ST8/SpR6
- Post CCT
- Clinical Fellow
- Research post with no clinical work
- Research post with part-time clinical work
- Part-time clinical non-training
- Other (please specify)

* 14. Under which Deanery/Local Education Training Board do you work?

- Republic of Ireland
- NHS Education for Scotland
- Northern Ireland Medical and Dental Training Agency
- Wales Deanery
- Health Education North East
- Health Education North West
- Health Education Yorkshire and the Humber
- Health Education East Midlands
- Health Education West Midlands
- Health Education East of England
- Health Education Thames Valley
- Health Education Kent, Surrey and Sussex
- Health Education Wessex
- Health Education South West
- Health Education North Central and East London
- Health Education North West London
- Health Education South London

Cost of Surgical Training Survey 2015

6. Current Salary

* 15. WITHOUT BANDING- What is your current basic salary? (gross, to the nearest pound)
Please do not enter commas or symbols into any boxes relating to numerical values.

To remind you, doctors in training pay scales:
England, Northern Ireland and Wales (Scotland in brackets).
FY1
22636 (23205)
24049 (24654)
25461 (26102)

FY2
28076 (28782)
29912 (30664)
31748 (32546)

Specialty Training
30002 (30605)
31838 (32478)
34402 (35093)
35952 (36675)
37822 (38582)
39693 (40491)
41564 (42399)
43434 (44307)
45304 (46215)
47175 (48123)

* 16. What is your current banding as per your contract?

- 1A
- 1B
- 1C
- 2A
- 2B
- 3
- Military- no banding recieved
- Other (please specify)

* 17. Are you currently entitled to a study leave budget?

- Yes
- No
- Military trainee- funding at discretion of Defence Deanery

If yes, please give the approximate value for 12 months (to the nearest pound)

Cost of Surgical Training Survey 2015

7. Debts

* 18. What year did you qualify from medical school?

* 19. Where was your medical school?

- UK
- Republic of Ireland
- Other EU
- Outside EU

* 20. Whilst at medical school have you received any of the following?

- Government student loan
- Military grant
- Bank or other loan
- NHS bursary
- Other bursary
- None of the above

* 21. If, on qualifying from medical, school you had debt (overdraft, credit cards and all student or professional loans, excluding mortgages) - please estimate the total value at that time (to the nearest pound or euro)

* 22. Is some or all of your study budget used to fund mandatory regional teaching?

- Some
- All
- None
- Don't know

* 23. How much in total have you have paid for courses out of your own money that was not reimbursed (cumulative over training, to the nearest pound or euro)?

* 24. How much in total have you paid for conferences out of your own money that was not reimbursed (cumulative over training, to the nearest pound or euro)?

Cost of Surgical Training Survey 2015

8. Expenditures- Course and Exam Attendance

* 25. During your surgical training please identify which of the following courses or exams you have attended/attempted, and how many times:

	Once	Twice	3 x	More	Never
ALS	○	○	○	○	○
APaedsLS	○	○	○	○	○
ATLS	○	○	○	○	○
Basic Surgical Skills	○	○	○	○	○
CCriSP	○	○	○	○	○
USMLE	○	○	○	○	○
RCSEng STEP	○	○	○	○	○
MRCS Parts 1&2/A	○	○	○	○	○
MRCS Part 3/B	○	○	○	○	○
DOHNS	○	○	○	○	○
FRCS Part 1	○	○	○	○	○
FRCS Part 2	○	○	○	○	○
Training the Trainers	○	○	○	○	○

* 26. For any of the following courses or exams you attended, did you receive any funding?

	All	Part	None	Not applicable
ALS	○	○	○	○
APaedsLS	○	○	○	○
ATLS	○	○	○	○
Basic Surgical Skills	○	○	○	○
CCriSP	○	○	○	○
USMLE	○	○	○	○
RCSEng STEP	○	○	○	○
MRCS Parts 1&2/A	○	○	○	○
MRCS Part 3/B	○	○	○	○
DOHNS	○	○	○	○
FRCS Part 1	○	○	○	○
FRCS Part 2	○	○	○	○
Training the Trainers	○	○	○	○

* 27. In the last year, how much have you spent attending MANDATORY courses (to the nearest pound or euro)?

* 28. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 29. In the last year, how much have you spent attending NON-MANDATORY training courses (to the nearest pound or euro)?

* 30. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 31. Since graduation from medical school, how much have you spent on registering for, or attending, post-graduate exams (to the nearest pound or euro)?

* 32. How much of this has been reimbursed through your study budget or other funding (to the nearest pound or euro)?

33. Have you received industry funding to attend any of the following?

	No industry funding received	Minor industry funding (under half expenditure)	Major industry funding (over half expenditure)	Completely industry funded
Courses				
Conferences				
Exams				

Cost of Surgical Training Survey 2015

9. Expenditures- Conferences, Memberships and Subscriptions

* 34. In the last year, how much have you spent attending conferences (to the nearest pound or euro)? Please include the cost of travel, registration fees and accommodation.

* 35. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 36. Have you been refused funding for attending conferences in any of the regions below, for reasons other than your budget has already been used up?

- [ ] UK - my deanery
- [ ] UK - outside my deanery
- [ ] Republic of Ireland
- [ ] I have not been refused funding
- [ ] Other (please specify)

* 37. Are you a member of any of the following professional bodies or have any other professional fees to pay?

- [ ] General Medical Council or Irish Medical Council
- [ ] Royal College of Surgeons of Edinburgh
- [ ] Royal College of Surgeons of England
- [ ] Royal College of Physicians and Surgeons of Glasgow
- [ ] Royal College of Surgeons of Ireland
- [ ] Specialty associations eg ASGBI / SCTS / BOA / ENT-UK / BNS / BAPS / BAOMS / Vascular Society / BAPRAS etc
- [ ] Sub-specialty associations eg AUGIS / ACPGBI / BRS / ALSGBI / BASO / BTS etc
- [ ] Trainee associations eg ASiT / BOTA etc
- [ ] JCST (ISCP training fee)
- [ ] British Medical Association or Irish Medical Organization
- [ ] Hospital Consultants and Specialists Association
- [ ] MDU / MPS / other medical indemnity provider
- [ ] Royal Society of Medicine
- [ ] Journal subscriptions
- [ ] Regional training day fees
- [ ] Others (please specify)

* 38. What is your current annual subscription to your surgical royal college? (to the nearest pound or euro)

* 39. In the last year how much have you spent on specialty society memberships (excluding surgical royal colleges, to the nearest pound or euro)?

* 40. In the last year how much have you spent on journal subscriptions (to the nearest pound or euro)?

* 41. In the last year how much have you spent on text books (to the nearest pound or euro)?

Cost of Surgical Training Survey 2015

10. Out of Training Fellowships and Postgraduate Degrees

* 42. Have you undertaken a post-graduate degree since graduating from medical school?

- [ ] Yes- MD
- [ ] Yes- PhD/DPhil
- [ ] Yes- MSc
- [ ] Yes- MPhil
- [ ] Yes- MEd
- [ ] Yes- MA
- [ ] Yes- MS/MChir
- [ ] No

Yes- Other (please specify)

43. If yes, please estimate the cost of this degree to you personally in monetary terms. Please consider university fees and potential income lost that was not covered by any other funding source.

* 44. Have you undertaken an overseas or other out-of-training fellowship?

- ( ) Yes
- ( ) No

45. If, yes, did this negatively impact on your financial situation, please describe.

Cost of Surgical Training Survey 2015

11. Financial Advice

* 46. Have you previously claimed tax relief from HM Revenue & Customs (or Revenue Tax and customs Ireland/Cain agus Custaim na hEireann) on any of the training and professional costs below? Please select all those that apply.

- [ ] GMC or Irish Medical Council
- [ ] Surgical Royal College
- [ ] MPS/MDU
- [ ] BMA or IMO
- [ ] Specialty Association
- [ ] Journal Subscriptions
- [ ] Exam Fees
- [ ] JCST
- [ ] Courses
- [ ] Conferences
- [ ] I have not claimed tax relief for any of the professional costs above

* 47. Do you have, or have you ever consulted an accountant or financial advisor?

- ( ) Accountant
- ( ) Financial advisor
- ( ) Both
- ( ) Neither

Cost of Surgical Training Survey 2015

12. The Non-Monetary Costs of Surgical Training

Nearly there, this is the last page of questions!

* 48. How many times have you moved house for work?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16 or above

* 49. With regards to childcare please select one of the following:

- I do not have children
- I have had to pay for weekend childcare to allow me to work
- I have had to pay for evening childcare to allow me to work
- I have had to pay for both evening and weekend childcare to allow me to work
- I have children but have not had to pay for evening or weekend childcare

50. Do you think your surgical training has had a significant cost in terms of any of the following:

	Yes	No
Mental Health	○	○
Physical Health	○	○
Relationships	○	○
Financial Security	○	○
Ability to settle down in a permanent home	○	○

Other (please specify)

51. Please answer the following questions

	Yes	No	Unsure
I have missed a major family event due to clinical work	○	○	○
I have missed many family events due to clinical work	○	○	○
I have missed a major family event due to non-clinical work that was necessary for my career progression	○	○	○
I have missed many major family events due to non-clinical work that was necessary for my career progression	○	○	○
Staffing levels in my current post impact negatively on my quality of life	○	○	○
Rota patterns in my current post impact negatively on my quality of life	○	○	○

52. Please answer the following questions

	Yes	No	Maybe
I would support a fixed "training fee", which I would pay annually throughout my training that would cover tuition, courses, exams and fees to professional bodies such as surgical royal colleges, the GMC and one specialty association	○	○	○
I would support raising the annual Surgical Royal College Subscription for all MEMBERS AND FELLOWS in order to subsume the costs of the JCST fee	○	○	○
I would be happy to fund (up to £500 or 700 euro) a boot-camp in my specialty during core training	○	○	○
The cost of surgical training in the UK and Ireland is likely to dissuade me from a career in surgery	○	○	○
The cost of training in the UK and Ireland is likely to make me leave medicine altogether	○	○	○
The cost of training in the UK and Ireland is likely to make me leave the UK or Ireland to work as a doctor elsewhere	○	○	○

53. Are there any other comments you would like to make regarding the cost of surgical training, study budgets or any other related matters? Please use the box below.

54. Who do you think should contribute to the cost of surgical training? Please rank the stakeholders below, from most contribution (1), to least (9).

- The Government
- NHS Trusts
- Universities
- Private sector providers
- Trainees
- Surgical Royal Colleges
- Industry
- Surgical specialty associations

Cost of Surgical Training Survey 2015

13. End of Survey

Thank you for taking the time to complete this survey, we are very grateful for your responses.

The results will be freely disseminated, including through publication and on trainee association websites, and provided to Political Leaders, the Royal Colleges, JCST and Specialty Associations.

For more information about the work being undertaken on your behalf, please visit our website, email us or tweet:

www.asit.org
info@asit.org
@ASiTofficial

For more information regarding professional bodies approved for tax relief:

https://www.gov.uk/government/publications/professional-bodies-approved-for-tax-relief-list-3/approved-professional-organisations-and-learned-societies#g

Appendix Three: Results for military trainees

There were 20 military trainee respondents. All 20 graduated from medical school in the UK: 19 (90%) graduated with debt on graduation (mean £18,650). 16 (80%) had a military grant at medical school, 10 (50%) had a government student loan and 4 (20%) had a bank or other loan. The mean amount paid out, that was not reimbursed, for courses was £4250, for conferences £1643, and £2130 for exams. Mean costs per year included surgical royal college subscription (£317), specialty society membership (£336), journals (£79), text books (£245). 7 had completed an MSc (35%), 5 an MD (25%) and 1 (5%) had done both since graduating from medical school (mean cost £12822).

Which specialty do you intend to pursue?	What is your stage of training?
General Surgery: 6 (30%) Trauma and Orthopaedics: 6 (30%) Vascular Surgery: 2 (10%)	Foundation Year 1: 1 (5%) Foundation Year 2: 0 (0%) ST1/CT1/SHO1: 4 (20%) ST2/CT2/SHO2: 2 (10%) ST3/SPR1: 1 (5%) ST4/SPR2: 4 (20%) ST5/SPR3: 2 (10%) ST6/SPR4: 1 (5%) ST7/SPR5: 1 (5%) ST8/SPR6: 1 (5%) Post CCT: 1 (5%) Research Post: 2 (10%)

Demographic	Military Trainees
Number	20
Male: Female (%)	14:6 (70:30%)
Mean Age (years)	33.8 (range 27-41)
LTFT Trainees (%)	0 (0)
Academic Trainees (%)	1 (5%)

Appendix Four: Tables of costs to the trainee in each surgical specialty

Using the published requirements for progression through surgical training we have provided an estimated breakdown of the costs to the trainee in each surgical specialty. The following tables of costs assume straight progression through F1-ST8 without taking time out for LTFT, post-graduate degrees or other career breaks. These prices are correct as of November 2016. July 2016 CCT guidance used as per JCST website. Conference costs do not include travel or subsistence.

BMA= British Medical Association, CCT= Certificate of Completion of Training, CST= Core Surgical Trainee, CT= Core Training (year), FP=Foundation Programme, FRCS= Fellowship of the Royal College of Surgeons, GMC= General Medical Council, HST=Higher Surgical Trainee, JCST= Joint Committee on Surgical Training, MRCS= Membership of the Royal College of Surgeons, RCS= Surgical Royal College, RCSEng= Royal College of Surgeons of England, RCPSCG= Royal College of Physicians and Surgeons of Glasgow, ST= Specialty Trainee (year).

Cardiothoracic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£710
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
RCSEng Specialty Skills in Cardiothoracic Surgery Course	£774
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
National or international conference attendance each year of training e.g. Society for Cardiothoracic Surgery conference booked as early bird rate as a member	£205 per year for 2 years as CST, £305 per year for 6 years as HST
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society for Cardiothoracic Surgery	£100 per year for 2 years as CST, £200 per year for 6 years as HST
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24039.00**

General Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (and completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
Course relevant to specialist interest e.g. RCSEng specialty skills in coloproctology	£585
ATLS revalidation to keep valid at time of certification	£350
Attendance at 4 national or international conferences during training e.g. Association of Surgeons of Great Britain and Ireland conference booked as early bird rate as a member	£260 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Association of Surgeons of Great Britain and Ireland	£81 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£22488.50**

Neurosurgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650.00
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724.00
Mandatory for CCT	
FRCS examination (including completion fee)	£2269.00
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354.00
Training and Education Course e.g. RCSEng Training the Trainers	£702.00
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Attendance at 4 national or international conferences during training e.g. Society of British Neurological Surgeons conference booked as early bird rate as an affiliate member	£150 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society of British Neurological Surgeons	£145 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21625.50**

Oral and Maxillofacial Surgery

Requirements	Cost
Essential for Surgical Training	
Bachelor of Dental Surgery e.g. University of Liverpool BDS graduate entry	£9000 for 4 years
JCST fee (for 7 years)	£255 per year for surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
GDC registration (for 9 years)	£890 per year
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Acute Life-threatening Events Recognition and Treatment (ALERT) Course	£95
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Emergency Skills Course e.g. RCSEng Emergency Skills in Oral and Maxillofacial Surgery	£877.50
Basic Plating Course e.g. AO basic OMFS plating course	£499
Head and Neck Anatomy Course e.g. RCSEng basic surgical anatomy of the head and neck	£414
Surgical Dermatology Course e.g. RCSEd Facial aesthetics course	£785
Orthognathic Course e.g. 6th biennial Glasgow course	£495
Microvascular Course e.g. University of Liverpool microvascular course	£1400
Complex/Advanced Trauma Course inc. condylar fractures and orbital access e.g. SORG course	£1500
3 advanced sub-specialty courses:	
e.g. Establishing a modern salivary gland practice	£1250
e.g. Newcastle functional septorhinoplasty and facial plastics cadaveric course	£950
e.g. Controversies in the management of head and neck cancer	£275
National or international conference attendance e.g. BAOMS Conference booked as early bird rate as a member *	£200

Other BMA Membership (for 9 years) RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7 Specialty Association Membership e.g. British Association of Oral and Maxillofacial Surgeons Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	 £113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+ £316 per year for 4 years as member, £531 for 1 year as fellow £85 per year for 7 years £1325
TOTAL ESTIMATE	**£71431.50**

* Where no minimum number of attendances documented a minimum of 1 included

Otolaryngology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
Diploma of Otolaryngology Head and Neck Surgery (DO-HNS)	£932.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Advanced Life Support Course	£550
Advanced Paediatric Life Support Course and 2 x ENT courses	see below
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Temporal Bone Dissection Course e.g. Cuschieri Skills Course	£225
Sinus Anatomy and Surgical Dissection Course e.g. Cuschieri Skills Course	£275
Head and Neck Surgery Course (including LASER) e.g. RCSEd Head and Neck Course Module 1 and 2	£850 and £1050
Septorhinoplasty and Facial Plastics Surgery Course e.g. NSTC Course	£350
Advanced Paediatric Life Support Course	£395
National or international conference attendance e.g. BACO Conference booked as an ENT-UK member *	£825
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. ENT-UK	£210 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£25218.50**

* Where no minimum number of attendances documented a minimum of 1 included

Paediatric Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Paediatric Life Support Course	£395
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Association of Paediatric Surgeons conference booked as early bird rate as a member *	£150
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Paediatric Surgeons	£110 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21640.50**

* Where no minimum number of attendances documented a minimum of 1 included

Plastic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. BAPRAS	£150 per year for 7 years (first year membership free)
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£20561.50**

Trauma and Orthopaedic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Trauma Life Support Course (ATLS)	£650
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Basic Course on Fracture Management e.g. RCPSCG principles of casting for orthopaedic trainees	£20
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Orthopaedic Association conference booked as a member *	Free
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Orthopaedic Association	£152 per year for 2 years as CST, £166 per year for 2 years as ST3-4, £204 per year for 2 years as ST5-6, £240 per year for 2 years as ST7-8
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21405.50**

* Where no minimum number of attendances documented a minimum of 1 included

Urology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 7 years)	£255 per year of surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	£670.50
RCSEng Basic Surgical Skills Course (BSS)	£650
Advanced Trauma Life Support Course (ATLS)	£724
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Urodynamics Course e.g. Belfast Training Academy Course	£187.50
Paediatric Urology Course e.g. BAPU Course	£295
Spinal Injuries Course e.g. Princess Royal Spinal Unit Course	£450
Emergency Urology Course e.g. East of England Emergency Urology Course	£65
Attendance at 1 national or international conference every 2 years of training e.g. British Association of Urological Surgeons Conference booked as early bird rate as a member	£100 per year for 3 years
Other	
BMA Membership (for 9 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 4 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Urological Surgeons	£160 per year for 7 years
Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	£1325
TOTAL ESTIMATE	**£20719**

Vascular Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance per year e.g. Vascular Society Conference booked as a member at early bird rate	£375 per year for 8 years
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Vascular Society	£115 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24135.50**

STROBE Statement for A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract PAGE 1 □
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found PAGE 2-3 □
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported PAGE 5-6 □
Objectives	3	State specific objectives, including any prespecified hypotheses PAGE 6 □
Methods		
Study design	4	Present key elements of study design early in the paper PAGE 7-10 □
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection PAGE 7-10 □
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants PAGE 7-10 □
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable

		PAGE 7-10 □
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias PAGE 4, 7-10 □
Study size	10	Explain how the study size was arrived at PAGE 10 □
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why PAGE 7-10 □
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding PAGE 10 □
		(*b*) Describe any methods used to examine subgroups and interactions PAGE 10 □
		(*c*) Explain how missing data were addressed PAGE 9 □
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy PAGE 7-10 □
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed PAGE 10-12 □
		(b) Give reasons for non-participation at each stage PAGE 10-12 □
		(c) Consider use of a flow diagram N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders PAGE 10-12 □
		(b) Indicate number of participants with missing data for each variable of interest PAGE 10-13 □
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures PAGE 10-13 □
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included PAGE 10-13 □
		(*b*) Report category boundaries when continuous variables were categorized PAGE 10-13 □
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives PAGE 14-18 □
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias PAGE 4 □
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence

		PAGE 14-18
Generalisability	21	Discuss the generalisability (external validity) of the study results PAGE 14-18
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based PAGE 19

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE IN THE UK AND IRELAND

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-018086.R2
Article Type:	Research
Date Submitted by the Author:	12-Sep-2017
Complete List of Authors:	O'Callaghan, John; Association of Surgeons in Training Mohan, Helen; Association of Surgeons in Training Sharrock, Anna ; Association of Surgeons in Training Gokani, Vimal; Association of Surgeons in Training Fitzgerald, J; The Association of Surgeons in Training, Williams, Adam; Association of Surgeons in Training Harries, Rhiannon; Association of Surgeons in Training
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Surgery
Keywords:	MEDICAL EDUCATION & TRAINING, SURGERY, HEALTH ECONOMICS, surgical training, cost of training, SURGICAL EDUCATION

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE IN THE UK AND IRELAND

John M O'Callaghan, Helen M Mohan, Anna E Sharrock, Vimal J Gokani, J Edward Fitzgerald, Adam P Williams, Rhiannon L Harries; on behalf of the Council of the Association of Surgeons in Training

Corresponding author: Rhiannon.harries@doctors.org.uk

Address: Association of Surgeons in Training, 35-43 Lincoln's Inn Fields, London WC2A 3PE

http://www.asit.org

http://twitter.com/ASiTofficial @ASiTofficial,

Running head: The cost of surgical training

Category: Original research

Funding: Nil

Keywords: surgical training, cost of training, surgical education, medical education, health economics

Word count: **3809**

Abstract

Objectives:

Applications for surgical training has declined over the last decade and anecdotally, the costs of training at the expense of the surgical trainee are rising. We aimed to quantify the costs surgical trainees are expected to cover for postgraduate training.

Design:

Prospective, cross-sectional questionnaire based study.

Setting/Participants:

A non-mandatory online questionnaire for UK-based trainees was distributed nationally. A similar national questionnaire was distributed for Ireland, taking into account differences between the healthcare systems. Only fully completed responses were included.

Results:

There were 848 and 58 fully completed responses from doctors based in the UK and Ireland, respectively. Medical students in the UK reported a significant increase in debt on graduation by 55% from £17,892 (2000-2004) to £27,655 (2010-2014), $p<0.01$. 41% of specialty trainees in the UK indicated that some or all of their study budget was used to fund mandatory regional teaching. By the end of training, a surgical trainee in the UK spends on average £9,105 on courses, £5,411 on conferences and £4,185 on exams, not covered by training budget. Irish trainees report similarly high costs. Most trainees undertake a higher degree during their postgraduate training. The cost of achieving the mandatory requirements for completion of training ranges between £20,000-£26,000 (dependent on specialty), except oral and maxillofacial surgery, which is considerably higher (£71,431).

Conclusions:

Medical students are graduating with significantly larger debt than before. Surgical trainees achieve their educational requirements at substantial personal expenditure. To encourage graduates to pursue and remain in surgical training, urgent action is required to fund the mandatory requirements and annual training costs for completion of training and provide greater transparency to inform doctors of what their postgraduate training costs will be. This is necessary to increase diversity in surgery, reduce debt load and ensure surgery remains a popular career choice.

Strengths and Limitations of this Study

- This national study provides a large cross-sectional data set on the experience of the costs of surgical training by surgical trainees across all ten surgical specialties in the UK and Ireland
- The costs analysed provided a comprehensive overview of the breadth and depth of financial costs incurred by trainees.
- The wide-distribution of the survey and breadth of responses increased the likelihood that it is representative of trainee experience.
- We recognise that there is a significant number of surveys excluded due to incompletion, which we believe to be related to the need for accurate costings to compete the survey. However, the overall number of completed responses was higher than required to power the study.
- It is recognised that some costs could be subject to recall bias or an element of selection bias, in that those with significantly more debt may be more likely to respond, however the figures reported are largely consistent with the calculations we have made using the current prices of exams, courses and society memberships to verify the results.

Introduction

The number of trainees applying for surgical training has declined over the last decade[1]. Many factors including low workforce morale, poor work-life balance and recent contractual issues may act as a deterrent to medical students considering a career in surgery[2]. The cost of completing the mandatory postgraduate requirements to secure a higher surgical training programme post has been estimated to be between £2,735 and £20,780, dependent on surgical specialty (average £3,360) compared with medicine £2,815 and anaesthetics £2,215[3]. Following entry to higher surgical training, there are considerable ongoing costs incurred by trainees in order to meet the requirements for completion of training as mandated by the Joint Committee on Surgical Training (JCST). These include educational courses, conference attendance, Royal College membership and fellowship examinations and annual subscriptions, and specialty society membership subscriptions. In addition, trainees pay annual expenses such as registration with the respective regulatory bodies, the UK General Medical Council (GMC) or Irish Medical Council (IMC), medical indemnity insurance costs, and the JCST fee (paid by trainees in the UK).

In 2007, The Association of Surgeons in Training (ASiT) conducted a survey of UK surgical trainees, to assess the financial costs to trainees in surgical training[4]. The results demonstrated that the mean debt on qualification from medical school was over £20,000. However, in recent years there have been many new challenges facing the current generation of surgical trainees, including increased student debt, secondary to a rise in annual university tuition fees of up to £9,000 per annum[5]. It has previously been calculated that medical students graduating currently are unlikely to repay their student loan debt before reaching the 30-year point at which it is written off[6]. The salaries of male and female medical graduates diverge such that by the age of 55, the average male medical school

graduate earns 35% more[6]. This means that the average female graduate repays more when debt is low, but a lower amount when debt is high, compared to male graduates[6]. The cost of living has also increased; in the ten years, preceding November 2016 the UK Consumer Price Index (CPI) rose a total of 23.8%[7].

To assess the current situation, we repeated a refined study, with a broader remit and more in depth assessment of cost pressures on trainee surgeons in both the UK and Ireland. The main aim was to assess the true financial cost of training to the surgical trainee in each of the ten surgical specialties.

Methods

Participants and setting

Postgraduate surgical training in the UK and Ireland consists of a minimum of 8 years of training (except for oral and maxillofacial surgery (OMFS) and urology which is a minimum of 7 years) following completion of the initial post-qualification two-year Foundation Programme (or intern year in Ireland) **Figure 1**. Competitive entry occurs prior to both Core and Higher specialist training levels, except for neurosurgery, cardiothoracic surgery and Oral and maxillofacial surgery (OMFS) in the UK (and trauma and orthopaedics in Scotland), where 'run-through' training (no separate selection process between core and higher specialist training) from Core level exists. Core surgical knowledge is assessed by the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination and specialty specific knowledge during the later phase of higher surgical training is assessed by the Intercollegiate Fellowship of the Royal College of Surgeons (FRCS) examination.

In the UK and Ireland, the Joint Committee on Surgical Training (JCST) are responsible for curriculum development and quality assurance of all the surgical training programmes in the ten defined surgical specialities (cardiothoracic surgery, general surgery, neurosurgery, OMFS, otolaryngology, paediatric surgery, plastic surgery, trauma and orthopaedics, urology and vascular surgery). All surgical trainees are required to register with the JCST and to pay an annual fee (£255 at time of submission) that has more than doubled between 2010 and 2016. This fee supports the running costs of the JCST to manage trainee enrolment and recommendation for certification; the work of each of the ten surgical specialties 'Specialty Advisory Committee' (SACs); curriculum review and development and website support. The

JCST training fee is covered for trainees in Ireland directly by funding received by the RCSI from the Health Service Executive (HSE).

In the UK, Local Education Training Boards (LETBs) provide funding to Local Education Providers (essentially the hospital where a trainee is employed) to cover the direct costs of delivering education and training. This sum includes two components: firstly, salary support of 50% of each doctor's basic salary; the second component is a placement fee of £12,400 per year, per trainee, to fund all costs involved in delivering education and training needs. It is from this placement fee that trainees apply for study funding support towards courses and conferences essential to their training, often referred to as 'study leave budget', with a restricted amount available dependent on the LETB. Funding for military trainees in the UK regular Defence Medical Services (DMS) is overseen by External Education and Training Support (EETS) within the Defence Deanery. Funding for training courses for military trainees is therefore at the discretion of the Defence Consultant Advisor and Defence Deanery[8]. In Ireland, the RCSI receives funding from HSE to provide surgical training, which covers the cost of the JCST fee, delivering the curriculum, human factors and operative skills training days. However, other elements essential for CCT (Certificate of Completion of Training) are not directly provided. More details of funding for Irish trainees is given in **Appendix 1**.

At the time of survey distribution, there were 5,323 surgical trainees in the UK and 438 surgical trainees in Ireland[9].

Questionnaire design and distribution

A novel 54-item, survey tool was developed, consisting of free-text, binomial and variable scale responses. The questionnaire was designed with reference to previously published guidelines on conducting questionnaire research[10-12]. The online platform *SurveyMonkey®* (Palo Alto, CA, USA, www.surveymonkey.com) was used to build the survey. All individual question items were compulsory. No individually identifiable information was collected; therefore, non-responders could not be identified for follow-up. No incentives were offered for participation. A link to the online survey was distributed to members of ASiT, surgical specialty associations, and local and national mailing lists of surgical trainees. All surgical trainees in the UK including foundation doctors were included, as appropriate to the level of analysis. A modified version of the survey was circulated to ASiT members and surgical trainees in Ireland, which reflected relevant differences in health systems and training. Interns were excluded from distribution of the survey in Ireland as contact details were only available for those registered as surgical trainees with RCSI. Data collection took place from 2nd December 2015 to 26th April 2016. The ethical dimensions of this non-mandatory, anonymous evaluation survey were considered and no concerns were identified. Participants consented to the use of the analysis, distribution and publication of anonymised grouped results. A copy of the survey can be found in **Appendix 2.**

This study was undertaken by ASiT (http://www.asit.org), a pan-surgical specialty professional body and registered charity in the UK (no: 274841) working to promote excellence in surgical training for the benefit of junior doctors and patients alike. ASiT is

independent of the National Health Service (NHS), Surgical Royal Colleges, and specialty associations.

Data analysis

Only fully completed questionnaires were included in the analysis. Due to the differing healthcare structures and funding systems of postgraduate education and training in UK and Ireland, a modified version of the survey was used for Ireland and the results are presented separately. Military trainees were excluded due to low numbers and a separate training funding structure. Data was graphed and analysed in *Excel®* (Microsoft, USA). Significance testing for continuous variables was conducted using Mann-Whitney U Test in *Stata®* (Statacorp, USA); statistical significance was accepted at $p<0.05$. Survey sample size calculations were based on standard published formulae and assuming a population of 6000 individuals, with alpha=0.01, 209 responses would be sufficient for margin of error of 0.03[13]. For readability, all values are presented to the nearest pound (£) or euro (€). We have used the exchange rate as accessed on 13th January 2017 of £0.87= €1.00 to provide comparisons between the two currencies[14]. The study results are reported in concordance with STROBE guidance on observational studies[15]. Results regarding costs are presented displaying trainees year of graduation in blocks of 5 years to show trends over time.

Costs of CCT to the trainee in each surgical specialty

Using guidance available from the JCST, the total cost of achieving the mandatory and desirable requirements for CCT in each of the surgical specialties was also calculated. Where conference attendance was mandated, but no exact minimum number described, the cost of at least one attendance during the training period was calculated. For courses which

required re-validation at the end of training, the reduced course cost of re-validation rather than a full attendance was used. Course costs from recognised bodies, such as the BMA and Surgical Royal Colleges, were used in all calculations, where applicable. Conference costs were calculated using the reduced rates available to society members or early registrations where possible.

Results

Of 1603 surveys submitted, a total of 868 fully completed responses were included in the analysis from doctors based in the UK, and 58 fully completed responses from doctors based in the Republic of Ireland. Respondent demographics by country of work are detailed in **Table 1.**

United Kingdom-specific responses

For the purposes of monetary analysis UK military doctors (n=20) were excluded from the main analysis, however a summary of military doctors' survey findings can be found in **Appendix 3**. This resulted in a total of 848 respondents for analysis. Of 848 respondents, 751 (88%) graduated from medical school in the UK. 89% (672) of these UK medical school graduates graduated with debt, with a mean of £25,404. The average debt by year of graduation has increased by 55% from £17,892 to £27,655 comparing graduates in the most recent generation (2010-2014) with those graduating between 2000 and 2004 ($p<0.01$) **Figure 2**.

There were 659 specialty trainee respondents from the UK (grades CT/ST1 to ST8) **Table 2**. Of these, 93% (618) responded that they were currently entitled to a study leave budget. The median value was £600 per annum (range £500-£835). Three LETBs reported no defined budget limit (Yorkshire and Humber, South West and Thames Valley). 41% of all respondents in specialty training indicated that some (31% of respondents) or all (10% of respondents), of their study budget was used to fund mandatory regional teaching.

By the end of training, a surgical trainee in the UK can expect to have spent on average £9,105 on courses, £5,411 on conferences and £4,185 on exams (£18,701) that they have

not been reimbursed through any source. Expense per year on conferences has marginally increased from £331 to £414 comparing older graduates with the more recent generation (2000-2004 versus 2010-2014, p=0.28). However, course expenses per year have increased significantly; the most recent graduates from medical school, graduating in the years 2010-2014, have spent on average £1,311 per year. This is an increase of 121% on the annual amount spent by medical school graduates graduating between 2000 and 2004 (p<0.01) **Figure 3**.

400 respondents (47%) from the UK have undertaken a postgraduate degree since graduating from medical school, with this proportion rising by the later stages of training (ST7-8 and post-CCT fellow) to 68% (96/141). The average cost of the degree, including university fees and loss of earnings was estimated by respondents at £18,009; with an MD/PhD being the most popular higher degree completed (24.8%, mean cost £27,882), followed by MSc (21.3%, mean cost £11,090).

732 respondents from the UK (86%) and 340 of 349 trainees level ST3-ST8 (97%) pay an annual subscription to one of the four surgical royal colleges (mean £305 for all trainees, mean £386 for ST3-ST8). 700 respondents (82%) pay annually to their SAC-defined specialty society (mean £343) and 672 (79%) are members of the British Medical Association. Over the last year, the mean amount spent on journals was £72 and on textbooks was £212.

Ireland-specific responses

Of the 58 respondents, 57 were currently working in Ireland and one was on fellowship in the USA **Table 1 and Table 3**. 25 (43%) reported that they were currently entitled to a training fund **Appendix 1**. In the past year, trainees spent on average £1278 (€1469) on mandatory courses, including travel expenses to courses, many of which are outside of

Ireland, of which a mean of £784 (€902) euros was not reimbursed. Trainees spent a mean of £1,977 (€2,321) on non-mandatory courses, of which a mean of £1,850 (€2,164) was not reimbursed. In the past year, respondents had spent a mean of £1,153 (€1,353) on attending conferences, of which a mean £1,005 (€1,183) was not reimbursed. Since graduation, across all grades trainees had spent a mean £4,829 (€5,669) on examinations, of which a mean £3,402 (€4,004) was not reimbursed. For senior trainees (ST8), an average £9,796 (€11,500) had been spent on exams, of which £5,396 (€6,351) was not reimbursed.

47 respondents (n=81%) from Ireland had undertaken a post-graduate degree since graduating from medical school. The MCh was the most popular post-graduate degree (n=15, 26%), followed by the MSc (n=13, 22%) and MD (n=11, 19%).The average estimated total monetary cost of undertaking a postgraduate degree to the trainee, including course fees and loss of income, was £22,093 (€25,936).

Estimated costs of training (UK and Ireland) using CCT essential and desirable criteria

The costs range between £20,000 (€23,479) to £26,000 (€30,523) depending on surgical specialty, except OMFS, which is considerably higher (£71,431 or €83,858) due to the dual qualification in medicine and dentistry as well as having significantly more mandatory training courses than other specialties **Appendix 4**.

Only the minority of the costs are tax deductible, add to this the estimated cost of a postgraduate degree (£18,009 or €21,142), which many surgical trainees will also undertake at their own expense, and the estimated costs to the trainee increase to approximately £40,000 (€46,958, excluding OMFS).

Discussion

This study has shown that individual doctors incur many thousands of pounds in personal expense after graduating from medical school to pursue a career as a surgeon and to meet the requirements to complete surgical training. These costs are incurred in addition to the significant debt built up by most medical school graduates, a debt burden likely to rise further as a greater proportion of students graduate under increased student tuition fees in the UK. Many of the costs paid by the trainee towards their training are not recognised as tax deductible, yet are incurred to cover requirements that are essential to progress through training schemes, and therefore to maintain one's livelihood. Consultant surgeons-to-be now spend considerably more per year on courses than in the past, and these now represent the single largest training cost, according to our results. Efforts to make surgery an attractive and inclusive career must include an equitable distribution of training costs to the trainee.

Individual trainees spend significant amounts on courses that are not actually mandatory as documented in CCT requirements. We speculate there are two reasons for this; firstly, surgical trainees will undertake courses above and beyond the minimum requirements to develop their skills. Gaps in knowledge and experience delivered in current training posts are likely to contribute to this, such that simulation courses are necessary to address training needs. As such, issues with training programmes failing to meet trainee's educational needs are instead transferred to trainees, who still obtain this necessary training at their own cost. Secondly, to be competitive for higher surgical training and for consultant posts, trainees may undertake additional courses and extracurricular activities.

We have identified a regional variation in what amount is available to trainees, despite the standardised placement fee from the LETB. Study budgets for specialty trainees were lower than the values released in response to the recent FOI request by Varley *et al* in 7 out of 10 LETBs (North Central, South and North West London, North West England, East of England, Kent Surrey and Sussex and North East England), and equal in three LETBs (East Midlands, Wales, West Midlands)[16]. It is desirable that study budgets are standardised across the UK, in both amount and that they should not be top-sliced to provide mandatory regional teaching, and in the longer term all items deemed essential for CCT (including the JCST fee), should be funded directly, without expense to the trainee. ASiT has previously highlighted this issue of uncontrolled geographical variation, calling for an equitable approach through national standardisation[17].

Irish trainees bear similar high costs in surgical training to their UK counterparts, not surprisingly given that JCST requirements are the same. The higher cost of courses for Irish trainees may reflect increased travel and accommodation expenses, as many courses require travel outside of Ireland and the exclusion of Irish interns from the study, who are less likely to have undertaken expensive technical skills courses. The higher cost of exams may reflect in part a higher proportion of Irish trainees who undertake USMLE examinations to pursue a fellowship in the USA, as well as increased travel expenses to intercollegiate examinations often held in the UK. While funding is available to reimburse some of these expenses, it falls short of being sufficient to avoid trainees bearing the greatest burden of the cost. These costs are on top of annual mandatory costs such as membership or fellowship of RCSI. These are a significant additional cost- for example, the 2016/2017 subscription rate is £315 (€370) for fellows and £226 (€265) for members, and the annual

Irish Medical Council(IMC) retention fee (£477 (€560) for those registered for less than 3 years and £515 (€605) for those registered for more than 3 years). Of note, the payment for the Irish Medical Council (IMC) is an annual payment and cannot be split across the year which places a significant financial burden on trainees at the time of the year when they move jobs and incur considerable additional expenses.

68% of later stage higher surgical trainees in the UK and 81% of Irish trainees report obtaining a higher degree. This was associated with an average cost estimated by respondents of over £18,000 and £22,000 in the UK and Ireland, respectively. Whilst it is not deemed mandatory by the JCST to undertake a higher degree within surgical training, there are a number of reasons why surgical trainees choose to undertake one. Firstly, it is required in order to practice as an academic consultant surgeon, and secondly, a significant proportion of trainees will undertake one in order to make themselves competitive for consultant appointment.

Doctors need to be aware in advance of what their chosen pathway is likely to cost them, alongside the starting salary for consultant posts when they complete their training (ranging from £76,761 in the UK and £95,775 (€105,000) in Ireland[18,19]). This study has provided the most detailed assessment yet for both UK and Irish surgical trainees. It is difficult to compare the costs to other medical specialties as few similar studies have been undertaken in other disciplines. One calculation for the training costs towards the completion of CCT in Obstetrics and Gynaecology estimated slightly less than for surgical trainees, at £14,224[20]. Another calculation for only the early stages of training in other specialties was also slightly less for medicine and anaesthetics, than surgical specialties[3]. Comparisons to other professional careers, such as solicitors, are also difficult, but working in the private sector

has additional benefits. After qualifying with a law degree, solicitors must complete a Legal Practice Course (LPC), which costs £8,500-£15,000 dependent on type of course and location[21]. It is however possible to have this cost covered by a law firm if obtaining a training contract in advance, and many law firms will also provide a living expense grant of several thousand pounds per year[22].

Research by the University of Kent for the Department of Health has provided cost-estimates for the training of various doctor grades from the start of medical school onwards[23]. This work found that the total cost of training a consultant was £564,112, with some contributions that came largely from the individual (such as undergraduate university fees, lost earnings, and postgraduate training fees) and others that came predominantly from the state (clinical placement, tuition and replacement)[23]. It is not possible from the document to disentangle the values independently contributed by each party.

An important consideration frequently overlooked in these analyses relates to the hospital activity performed by trainees generating hospital income. Doctors in training have a value as well as a cost, which should be taken into account to offset such cost-estimates. Two UK-based studies have sought to quantify this within surgical training[24,25]. In general surgery, an analysis of 1,184 out-patient clinic consultations demonstrated that trainees delivered a quarter of all out-patient related income, averaging £36,452 per trainee[24]. This was sufficient to offset 95% of the trainee's average basic salaries. Within ENT surgery, clinical activity undertaken by SHO grade doctors was calculated to generate an annual net income of £73,048 (4.3 times higher than their employment costs)[25]. Registrars generated an annual net income of £121,587 (5.4 times their employment cost). In total, 94% of trainees included in this analysis generated more hospital income than their employment costs.

Given the benefit derived from hospitals from trainee-related clinical activity, it is reasonable that a proportionate amount of the associated costs of training should be borne by the employing hospitals.

The costs analysed in this study present a comprehensive overview of the breadth and depth of costs incurred by trainees. The survey was widely distributed across regions, specialties and grades, increasing the likelihood that it is representative of trainee experience. Future studies should seek to understand the balance of costs incurred by the health system in supporting training, which are poorly understood, the influence of training cost on career choice, and wider international comparisons on the costs of training in different health systems.

Conclusions

Medical students are graduating with increasing debt. Surgical trainees achieve their educational requirements through considerable personal expenditure, with a total estimated monetary cost to the trainee in the region of £40,000 (€47,000). The Certificate of Completion of Training in surgical specialties comes with significant costs, which until now have not been accurately estimated. The cost goes far beyond the national training fee paid to the JCST annually in the UK, and greater transparency is immediately necessary to inform doctors of what their postgraduate training costs will be across all specialties. We strongly believe that the costs of mandatory surgical training should be covered by the Local Education and Training Boards, including the JCST fee and the costs of achieving CCT mandatory requirements. Furthermore, funding should be made available for non-mandatory surgical educational activity deemed beneficial by the trainee's educational supervisor, to ensure surgeons are trained to the highest level to provide excellent care. This is necessary to increase diversity in surgery, reduce debt load and make surgery a popular career choice again.

Acknowledgements

We thank all those trainees who took the time to complete the survey. We acknowledge the work done by Edward Fitzgerald and Charles Giddings on the previous 2007 costs of surgical training survey.

Contributors

RLH and JEFF conceived the study. All authors designed the questionnaire. JMOC collected the data. JMOC, HMM and RLH analysed the data. All authors were responsible for compiling and editing the manuscript, and approving the final article.

Competing interests

The authors are either current or previous surgical trainees, and current or past elected members of the Council of the Association of Surgeons in Training (Registered Charity No. 274841). JEFF is an employee of KPMG Global Health Practice, Honorary Clinical Advisor to the Lifebox Foundation charity, and a Trustee of the SURG Foundation research charity. The authors have no other relevant financial or personal conflicts of interest to declare in relation to this paper.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data sharing statement

Summary data is available from the corresponding author at president@asit.org. Consent to data sharing was sought prior to survey completion, and the presented data are anonymised grouped, hence risk of individual identification is low.

Table 1. Basic Demographics. Respondents divided by country of work.

Demographic	United Kingdom	Ireland
Number	848	58
Male: Female (%)	518:327 (61.3:38.7, 3 NR)	35:23 (60:40)
Mean Age (years)	31.6 (range 23-55)	31.3 (range 25 to 41)
LTFT Trainees (%)	36 (4.3)	0
Academic Trainees (%)	69 (8.1)	N/A

NR= Not Reported, LTFT= Less than full time training

Table 2. Specialty, stage of training and LETB (Local Education and Training Board) for respondents from UK.

Which specialty do you intend to pursue?	What is your stage of training?	In which LETB/Deanery do you work?
Cardiothoracic Surgery: 32 (3.8%) General Surgery: 296 (34.9%) Neurosurgery: 28 (3.3%) Oral and Maxillofacial: 19 (2.2%) Otolaryngology: 75 (8.8%) Paediatric Surgery: 29 (3.4%) Plastic Surgery: 66 (7.8%) Trauma and Orthopaedics: 172 (20.3%) Vascular Surgery: 59 (5.4%) Urology: 59 (7.0%) Other/Unsure: 26 (3.1%)	Foundation Year 1: 12 (1.4%) Foundation Year 2: 63 (7.4%) ST1/CT1/SHO1: 148 (17.5%) ST2/CT2/SHO2: 96 (11.3%) CT3/SHO3: 10 (1.2%) ST3/SPR1: 78 (9.2%) ST4/SPR2: 59 (7.0%) ST5/SPR3: 77 (9.1%) ST6/SPR4: 59 (7.0%) ST7/SPR5: 60 (7.1%) ST8/SPR6: 67 (7.9%) Post CCT: 17 (2.0%) Clinical Fellow: 35 (4.1%) Research Post:53 (6.3%) Other: 14 (1.7%)	Scotland: 70 (8.3%) Northern Ireland: 49 (5.8%) Wales: 51 (6.0%) North East: 42 (5.0%) North West: 80 (9.4%) Yorkshire and Humber: 55 (6.5% East Midlands: 51 (6.0%) West Midlands: 70 (8.3%) East of England: 61 (7.2%) Thames Valley: 41 (4.8%) Kent, Surrey and Sussex: 41 (4.8%) Wessex: 41 (4.8%) South West: 61 (7.2%) North East and Central London: 43 (5.1%) North West London: 44 (5.2%) South London: 46 (5.4%)

CT= Core Training, NCE = North Central and East London, SPR= Specialist Registrar, ST= Specialist Training.

Table 3. Specialty and stage of training for respondents from Ireland.

Which specialty do you intend to pursue?	What is your stage of training?
Cardiothoracic Surgery: 2 (3%) General Surgery: 22 (38%) Neurosurgery: 1(2%) Oral and Maxillofacial: 0 Otolaryngology: 2 (3%) Paediatric Surgery: 0 Plastic Surgery: 3(5%) Trauma and Orthopaedics: 20(34%) Vascular Surgery: 2(3%) Urology: 6 (10%)	ST1/CT1/SHO1: 13 (22%) ST2/CT2/SHO2: 10 (17%) ST3/SPR1: 12 (21%) ST4/SPR2: 5 (9%) ST5/SPR3: 4 (7%) ST6/SPR4: 2 (3%) ST7/SPR5: 1 (2%) ST8/SPR6: 3 (5%) Clinical Fellow: 1 (2%) Research Post: 1 (2%)

CT= Core Training, SPR= Specialist Registrar, ST= Specialist Training.

References

1. Joint Committee on Surgical Training National Selection Leads Group, Verbal Communication 2016.

2. Jaunoo SS, King TR, Baker RF, Adama HL. A national survey of reasons why students and junior doctors choose not to pursue a career in surgery. Annals of the Royal College of Surgeons 2014;**96 (Suppl)**:192-94

3. Stroman L, Weil S, Butler K, McDonald C. The cost of a number: can you afford to become a surgeon? The Bulletin of the Royal College of Surgeons of England 2015;**97**(3):107-11 doi: 10.1308/147363515x14162390057944[published Online First: Epub Date]|.

4. The Cost of Surgical Training, Position Statement. London, UK: Association of Surgeons in Training, 2007.

5. Student Loans in England: Financial Year 2015-16. Glasgow, UK: The Student Loans Company, 2016.

6. Ercolani MG, Vohra RS, Carmichael F, Mangat K, Alderson D. The lifetime cost to English students of borrowing to invest in a medical degree: a gender comparison using data from the Office for National Statistics. BMJ open 2015;**5**(4):e007335 doi: 10.1136/bmjopen-2014-007335[published Online First: Epub Date]|.

7. Statistical bulletin: UK consumer price inflation: Nov 2016: Office for National Statistics, 2016.

8. Defence healthcare education and training (DHET)- Applications polic for defence medical services (DMS) external education and training, 4-6-3. 1.2 ed. Joint Services Publication, 2014.

9. Joint Committee on Surgical Training and Royal College of Surgeons in Ireland, Verbal Communication.

10. Jones TL, Baxter MA, Khanduja V. A quick guide to survey research. Annals of the Royal College of Surgeons of England 2013;**95**(1):5-7 doi: 10.1308/003588413x13511609956372[published Online First: Epub Date]|.

11. Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). Journal of medical Internet research 2004;**6**(3):e34 doi: 10.2196/jmir.6.3.e34[published Online First: Epub Date]|.

12. Woodward CA. Questionnaire construction and question writing for research in medical education. Medical education 1988;**22**(4):345-63

13. JE B, JW K, CC H. Organizational research: determining appropriate sample size in survey research. Information Technology, Learning and Performance Journal 2001;**19**(1):43-50

14. ECB. Euro foreign exchange reference rates: European Central Bank, 2017.

15. von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet (London, England) 2007;**370**(9596):1453-7 doi: 10.1016/s0140-6736(07)61602-x[published Online First: Epub Date]|.

16. Varley I, Kumar A. Cost of training in oral and maxillofacial surgery: beyond the second degree. The British journal of oral & maxillofacial surgery 2016;**54**(8):956-58 doi: 10.1016/j.bjoms.2016.06.006[published Online First: Epub Date]|.

17. Fitzgerald JE, Giddings CE, Khera G, Marron CD. Improving the future of surgical training

and education: consensus recommendations from the Association of Surgeons in Training. International journal of surgery (London, England) 2012;**10**(8):389-92 doi: 10.1016/j.ijsu.2012.03.012[published Online First: Epub Date]|.

18. British Medical Association. Pay scales for Consultants. 2017. https://www.bma.org.uk/advice/employment/pay/consultants-pay-england

19. Health Service Executive. April 1st 2017 Revised Consolidated Payscales. http://www.hse.ie/eng/staff/benefitsservices/pay/Consolidated-Payscales-1st-April-2017.pdf

20. Orr K, Smith M. The financial burden of specialty training. BMJ Careers 2016;**353**(8063):542

21. Costs of qualifying. Secondary Costs of qualifying 2017. http://www.lawsociety.org.uk/law-careers/becoming-a-solicitor/costs-of-qualifying/.

22. TargetJobs- Law. 2017.

23. Curtis L, Burns A. Unit costs of health and social care 2016: Personal social services research unit, University of Kent, 2016.

24. Fitzgerald JE, Ravindra P, Lepore M, Armstrong A, Bhangu A, Maxwell-Armstrong CA. Financial impact of surgical training on hospital economics: an income analysis of 1184 out-patient clinic consultations. International journal of surgery (London, England) 2013;**11**(5):378-82 doi: 10.1016/j.ijsu.2013.02.017[published Online First: Epub Date]|.

25. Clamp PJ, Malpas G, Mason KA, Giddings CE. Surgeons in training – a financial burden or benefit to NHS trusts? Ann R Coll Surg Engl (Suppl) 2011;**93**:22-24

Figure 1. Stages and years of training for UK doctors training to be consultant surgeons. Foundation Doctor Year 1 is the first stage following graduation from university/medical school. In Ireland, the Intern Year is the equivalent of the Foundation Doctor stage in the UK.

Figure 2. Mean debt on graduation from medical school, UK medical schools only. Debt has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), $p<0.01$.

Figure 3. Mean expense per year on courses and conferences that trainees have not been reimbursed. Trainees grouped into 5- year generations by year of graduation. Expense on courses has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), $p<0.01$. Expense on conferences has not significantly increased ($p=0.28$). UK medical school graduates only.

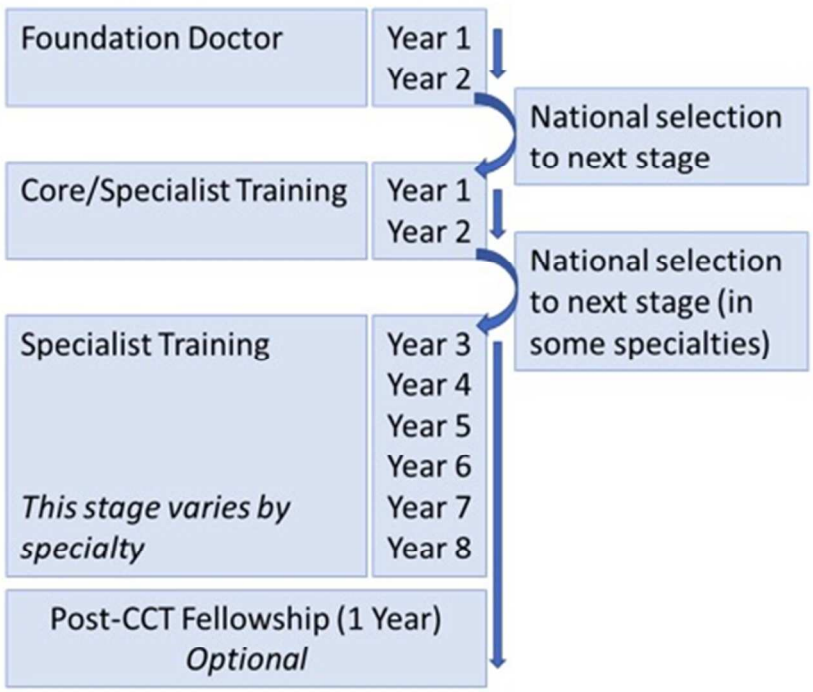

Figure 1. Stages and years of training for UK doctors training to be consultant surgeons. Foundation Doctor Year 1 is the first stage following graduation from university/medical school. In Ireland, the Intern Year is the equivalent of the Foundation Doctor stage in the UK.‼ ┼

44x34mm (300 x 300 DPI)

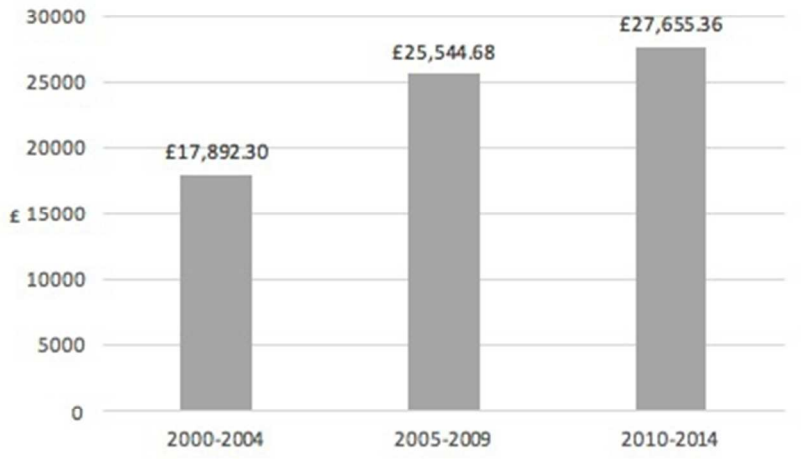

Figure 2. Mean debt on graduation from medical school, UK medical schools only. Debt has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01.‼ †

42x25mm (300 x 300 DPI)

Figure 3. Mean expense per year on courses and conferences that trainees have not been reimbursed. Trainees grouped into 5- year generations by year of graduation. Expense on courses has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01. Expense on conferences has not significantly increased (p=0.28). UK medical school graduates only.‼ ┼

43x21mm (300 x 300 DPI)

Appendix One: Sources of Funding for Higher Surgical Trainees in Ireland

In Ireland, as the RCSI directly administers surgical training in Ireland, it receives funding from the HSE to provide surgical training. This includes covering the cost of the JCST fee and delivering the curriculum, including human factors and operative skills training days. However, other elements essential for CCT such as a leadership course, train the trainers course and good clinical practice are currently not directly provided. There are three funding streams available to trainees on higher specialist training, equivalent to the UK "study budget"- the current funding available to HST trainees are:

1. Mandatory Fund- this is provided by the HSE/NDTP and administered by RCSI. It provides funding of up to 1500 euros for approved mandatory courses while in full-time training in Ireland. This fund does not carry forward year on year and cannot be used if for example, on an overseas fellowship. However, its scope is limited as only approved mandatory courses are funded (1).
2. Specialist training fund- this is a fund of 500 euros per year, which accumulates over the course of HST. It can be used for course fees, equipment costs and books etc. It excludes time spent out of full time training, e.g. on an overseas fellowship (1).
3. There is an additional clinical courses and exams fund, where trainees can claim 450 euros for exams or courses on a definitive list of those deemed relevant to the speciality. This includes a narrow list, for example Advanced Trauma Life Support (ATLS). For exams undertaken outside of Ireland, 650 may be claimed. This is directly administered by the HSE/MET (2). The fund will only cover the cost once per trainee per examination.

At the time of this survey, many trainees would have spent time prior to commencing HST completing courses to make themselves competitive to apply for HST at considerable personal cost. In addition, the range of courses covered by the above list currently excludes many courses undertaking by trainees in their surgical training.

It is worth noting that the fund does not adequately cover the cost of courses. For example, the clinical course and examination refund scheme will cover ATLS if undertaken in Ireland. The current cost of ATLS is 875 euros, but the scheme will only cover 450 euros. This does not include travel and accommodation costs to regional centres to complete the course. Similarly, for membership and intercollegiate examinations, this fund does not fully cover the cost, and as these are often held in the UK there are additional travel and accommodation expenses.

References Appendix 1:

1. RCSI Training Funds for SpR Trainees. http://rcsi.ie/files/surgery/docs/20161019040654_Funding-Information-2016.pdf Accessed 16th January 2017
2. HSE-National Doctors Training and Planning. Specialist Training Fund Guidance Document. July 2016.

Cost of Surgical Training Survey 2015

1. Introduction

This survey aims to quantify the additional costs incurred by surgeons in training in pursuit of their career goals. It also aims to quantify the availability of study budgets to cover the required courses and other training needs.

A similar survey was conducted by ASiT in 2007 and we aim to give some comparison of changes over time.

The results will be freely disseminated, including through publication and on the trainee association websites, and provided to Political Leaders, the Royal Colleges, JCST and Specialty Associations.

Completion indicates your consent for this analysis, distribution and publication of anonymised, grouped results. Individual responses remain anonymous.

This survey is for ALL TRAINEES, REGARDLESS OF SURGICAL SPECIALTY in the UK and Republic of Ireland. Students are not included.

It takes approximately 10 minutes to complete.

For more information:

www.asit.org
info@asit.org
@ASiTofficial

Cost of Surgical Training Survey 2015

2. In which country do you work?

* 1. Where do you work currently?

- ○ United Kingdom
- ○ Republic of Ireland
- ○ Other

Other (please specify)

Cost of Surgical Training Survey 2015

3. Pay

* 2. What is your current basic salary (without overtime, to the nearest euro)?
Please do not enter commas or symbols into any boxes relating to numerical values.

To remind you, current payscales are:

Intern € 30257
Senior House Officer
1 € 38839
2 € 40998
3 € 44224
4 € 46334
5 € 50578
6 € 52687
7 € 54746
Registrar
1 € 50578
2 € 52687
3 € 54746
4 € 56260
5 € 58279
6 € 60305
Senior Registrar
1 € 65000
2 € 65000
3 € 65620
4 € 67682
5 € 70061
6 € 72540
7 € 75097
Specialist Registrar
1 € 60404
2 € 61855
3 € 63953
4 € 65000
5 € 66070
6 € 68980
7 € 71878

* 3. What is your current average monthly take home pay after tax (to the nearest euro)?

4. Are you getting paid for your overtime?

- [ ] Yes- rostered only- all of it
- [ ] Yes- rostered only-some of it
- [ ] Yes- rostered and unrostered- all of it
- [ ] Yes-rostered and unrostered- some of it
- [ ] No

* 5. Are you currently entitled to a training fund? (e.g. the SpR mandatory training fund or specialist training fund?)

- [ ] Yes
- [ ] No

Cost of Surgical Training Survey 2015

4. Demographics

* 6. Are you a military trainee?

- Yes
- No

7. What is your gender?

- Male
- Female

* 8. What is your age? (years)

Cost of Surgical Training Survey 2015

5. Current Post

* 9. Do you currently hold an academic post?

- Yes
- No

* 10. Are you in Less Than Full Time Training?

- Yes
- No

11. Are you currently on leave?

- Yes- Maternity/Paternity leave
- Yes- Other leave
- No

* 12. Which specialty do you intend to pursue?

- Cardiothoracic surgery
- General Surgery
- ENT
- Neurosurgery
- Oral and Maxillofacial surgery
- Paediatric Surgery
- Plastic Surgery
- Trauma and Orthopaedics
- Vascular Surgery
- Urology
- Other (please specify)

* 13. What is your current grade?

- F1 or Intern
- F2
- ST1/CT1/SHO1
- ST2/CT2/SHO2
- CT3/SHO3
- ST3/SpR1
- ST4/SpR2
- ST5/SpR3
- ST6/SpR4
- ST7/SpR5
- ST8/SpR6
- Post CCT
- Clinical Fellow
- Research post with no clinical work
- Research post with part-time clinical work
- Part-time clinical non-training
- Other (please specify)

* 14. Under which Deanery/Local Education Training Board do you work?

- Republic of Ireland
- NHS Education for Scotland
- Northern Ireland Medical and Dental Training Agency
- Wales Deanery
- Health Education North East
- Health Education North West
- Health Education Yorkshire and the Humber
- Health Education East Midlands
- Health Education West Midlands
- Health Education East of England
- Health Education Thames Valley
- Health Education Kent, Surrey and Sussex
- Health Education Wessex
- Health Education South West
- Health Education North Central and East London
- Health Education North West London
- Health Education South London

Cost of Surgical Training Survey 2015

6. Current Salary

* 15. WITHOUT BANDING- What is your current basic salary? (gross, to the nearest pound)
Please do not enter commas or symbols into any boxes relating to numerical values.

To remind you, doctors in training pay scales:
England, Northern Ireland and Wales (Scotland in brackets).
FY1
22636 (23205)
24049 (24654)
25461 (26102)

FY2
28076 (28782)
29912 (30664)
31748 (32546)

Specialty Training
30002 (30605)
31838 (32478)
34402 (35093)
35952 (36675)
37822 (38582)
39693 (40491)
41564 (42399)
43434 (44307)
45304 (46215)
47175 (48123)

* 16. What is your current banding as per your contract?

- 1A
- 1B
- 1C
- 2A
- 2B
- 3
- Military- no banding recieved
- Other (please specify)

* 17. Are you currently entitled to a study leave budget?

- Yes
- No
- Military trainee- funding at discretion of Defence Deanery

If yes, please give the approximate value for 12 months (to the nearest pound)

Cost of Surgical Training Survey 2015

7. Debts

* 18. What year did you qualify from medical school?

* 19. Where was your medical school?

- UK
- Republic of Ireland
- Other EU
- Outside EU

* 20. Whilst at medical school have you received any of the following?

- Government student loan
- Military grant
- Bank or other loan
- NHS bursary
- Other bursary
- None of the above

* 21. If, on qualifying from medical, school you had debt (overdraft, credit cards and all student or professional loans, excluding mortgages) - please estimate the total value at that time (to the nearest pound or euro)

* 22. Is some or all of your study budget used to fund mandatory regional teaching?

- Some
- All
- None
- Don't know

* 23. How much in total have you have paid for courses out of your own money that was not reimbursed (cumulative over training, to the nearest pound or euro)?

* 24. How much in total have you paid for conferences out of your own money that was not reimbursed (cumulative over training, to the nearest pound or euro)?

Cost of Surgical Training Survey 2015

8. Expenditures- Course and Exam Attendance

* 25. During your surgical training please identify which of the following courses or exams you have attended/attempted, and how many times:

	Once	Twice	3 x	More	Never
ALS	○	○	○	○	○
APaedsLS	○	○	○	○	○
ATLS	○	○	○	○	○
Basic Surgical Skills	○	○	○	○	○
CCriSP	○	○	○	○	○
USMLE	○	○	○	○	○
RCSEng STEP	○	○	○	○	○
MRCS Parts 1&2/A	○	○	○	○	○
MRCS Part 3/B	○	○	○	○	○
DOHNS	○	○	○	○	○
FRCS Part 1	○	○	○	○	○
FRCS Part 2	○	○	○	○	○
Training the Trainers	○	○	○	○	○

* 26. For any of the following courses or exams you attended, did you receive any funding?

	All	Part	None	Not applicable
ALS	○	○	○	○
APaedsLS	○	○	○	○
ATLS	○	○	○	○
Basic Surgical Skills	○	○	○	○
CCriSP	○	○	○	○
USMLE	○	○	○	○
RCSEng STEP	○	○	○	○
MRCS Parts 1&2/A	○	○	○	○
MRCS Part 3/B	○	○	○	○
DOHNS	○	○	○	○
FRCS Part 1	○	○	○	○
FRCS Part 2	○	○	○	○
Training the Trainers	○	○	○	○

* 27. In the last year, how much have you spent attending MANDATORY courses (to the nearest pound or euro)?

* 28. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 29. In the last year, how much have you spent attending NON-MANDATORY training courses (to the nearest pound or euro)?

* 30. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 31. Since graduation from medical school, how much have you spent on registering for, or attending, post-graduate exams (to the nearest pound or euro)?

* 32. How much of this has been reimbursed through your study budget or other funding (to the nearest pound or euro)?

33. Have you received industry funding to attend any of the following?

	No industry funding received	Minor industry funding (under half expenditure)	Major industry funding (over half expenditure)	Completely industry funded
Courses				
Conferences				
Exams				

Cost of Surgical Training Survey 2015

9. Expenditures- Conferences, Memberships and Subscriptions

* 34. In the last year, how much have you spent attending conferences (to the nearest pound or euro)? Please include the cost of travel, registration fees and accommodation.

* 35. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 36. Have you been refused funding for attending conferences in any of the regions below, for reasons other than your budget has already been used up?

- [ ] UK - my deanery
- [ ] UK - outside my deanery
- [ ] Republic of Ireland
- [ ] I have not been refused funding
- [ ] Other (please specify)

* 37. Are you a member of any of the following professional bodies or have any other professional fees to pay?

- [ ] General Medical Council or Irish Medical Council
- [ ] Royal College of Surgeons of Edinburgh
- [ ] Royal College of Surgeons of England
- [ ] Royal College of Physicians and Surgeons of Glasgow
- [ ] Royal College of Surgeons of Ireland
- [ ] Specialty associations eg ASGBI / SCTS / BOA / ENT-UK / BNS / BAPS / BAOMS / Vascular Society / BAPRAS etc
- [ ] Sub-specialty associations eg AUGIS / ACPGBI / BRS / ALSGBI / BASO / BTS etc
- [ ] Trainee associations eg ASiT / BOTA etc
- [ ] JCST (ISCP training fee)
- [ ] British Medical Association or Irish Medical Organization
- [ ] Hospital Consultants and Specialists Association
- [ ] MDU / MPS / other medical indemnity provider
- [ ] Royal Society of Medicine
- [ ] Journal subscriptions
- [ ] Regional training day fees
- [ ] Others (please specify)

* 38. What is your current annual subscription to your surgical royal college? (to the nearest pound or euro)

* 39. In the last year how much have you spent on specialty society memberships (excluding surgical royal colleges, to the nearest pound or euro)?

* 40. In the last year how much have you spent on journal subscriptions (to the nearest pound or euro)?

* 41. In the last year how much have you spent on text books (to the nearest pound or euro)?

Cost of Surgical Training Survey 2015

10. Out of Training Fellowships and Postgraduate Degrees

* 42. Have you undertaken a post-graduate degree since graduating from medical school?

- [ ] Yes- MD
- [ ] Yes- PhD/DPhil
- [ ] Yes- MSc
- [ ] Yes- MPhil
- [ ] Yes- MEd
- [ ] Yes- MA
- [ ] Yes- MS/MChir
- [ ] No

Yes- Other (please specify)

43. If yes, please estimate the cost of this degree to you personally in monetary terms. Please consider university fees and potential income lost that was not covered by any other funding source.

* 44. Have you undertaken an overseas or other out-of-training fellowship?

- ( ) Yes
- ( ) No

45. If, yes, did this negatively impact on your financial situation, please describe.

Cost of Surgical Training Survey 2015

11. Financial Advice

* 46. Have you previously claimed tax relief from HM Revenue & Customs (or Revenue Tax and customs Ireland/Cain agus Custaim na hEireann) on any of the training and professional costs below? Please select all those that apply.

- [ ] GMC or Irish Medical Council
- [ ] Surgical Royal College
- [ ] MPS/MDU
- [ ] BMA or IMO
- [ ] Specialty Association
- [ ] Journal Subscriptions
- [ ] Exam Fees
- [ ] JCST
- [ ] Courses
- [ ] Conferences
- [ ] I have not claimed tax relief for any of the professional costs above

* 47. Do you have, or have you ever consulted an accountant or financial advisor?

- ( ) Accountant
- ( ) Financial advisor
- ( ) Both
- ( ) Neither

Cost of Surgical Training Survey 2015

12. The Non-Monetary Costs of Surgical Training

Nearly there, this is the last page of questions!

* 48. How many times have you moved house for work?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16 or above

* 49. With regards to childcare please select one of the following:

- I do not have children
- I have had to pay for weekend childcare to allow me to work
- I have had to pay for evening childcare to allow me to work
- I have had to pay for both evening and weekend childcare to allow me to work
- I have children but have not had to pay for evening or weekend childcare

50. Do you think your surgical training has had a significant cost in terms of any of the following:

	Yes	No
Mental Health	○	○
Physical Health	○	○
Relationships	○	○
Financial Security	○	○
Ability to settle down in a permanent home	○	○

Other (please specify)

51. Please answer the following questions

	Yes	No	Unsure
I have missed a major family event due to clinical work	○	○	○
I have missed many family events due to clinical work	○	○	○
I have missed a major family event due to non-clinical work that was necessary for my career progression	○	○	○
I have missed many major family events due to non-clinical work that was necessary for my career progression	○	○	○
Staffing levels in my current post impact negatively on my quality of life	○	○	○
Rota patterns in my current post impact negatively on my quality of life	○	○	○

52. Please answer the following questions

	Yes	No	Maybe
I would support a fixed "training fee", which I would pay annually throughout my training that would cover tuition, courses, exams and fees to professional bodies such as surgical royal colleges, the GMC and one specialty association	○	○	○
I would support raising the annual Surgical Royal College Subscription for all MEMBERS AND FELLOWS in order to subsume the costs of the JCST fee	○	○	○
I would be happy to fund (up to £500 or 700 euro) a boot-camp in my specialty during core training	○	○	○
The cost of surgical training in the UK and Ireland is likely to dissuade me from a career in surgery	○	○	○
The cost of training in the UK and Ireland is likely to make me leave medicine altogether	○	○	○
The cost of training in the UK and Ireland is likely to make me leave the UK or Ireland to work as a doctor elsewhere	○	○	○

53. Are there any other comments you would like to make regarding the cost of surgical training, study budgets or any other related matters? Please use the box below.

54. Who do you think should contribute to the cost of surgical training? Please rank the stakeholders below, from most contribution (1), to least (9).

- The Government
- NHS Trusts
- Universities
- Private sector providers
- Trainees
- Surgical Royal Colleges
- Industry
- Surgical specialty associations

Cost of Surgical Training Survey 2015

13. End of Survey

Thank you for taking the time to complete this survey, we are very grateful for your responses.

The results will be freely disseminated, including through publication and on trainee association websites, and provided to Political Leaders, the Royal Colleges, JCST and Specialty Associations.

For more information about the work being undertaken on your behalf, please visit our website, email us or tweet:

www.asit.org
info@asit.org
@ASiTofficial

For more information regarding professional bodies approved for tax relief:

https://www.gov.uk/government/publications/professional-bodies-approved-for-tax-relief-list-3/approved-professional-organisations-and-learned-societies#g

Appendix Three: Results for military trainees

There were 20 military trainee respondents. All 20 graduated from medical school in the UK: 19 (90%) graduated with debt on graduation (mean £18,650). 16 (80%) had a military grant at medical school, 10 (50%) had a government student loan and 4 (20%) had a bank or other loan. The mean amount paid out, that was not reimbursed, for courses was £4250, for conferences £1643, and £2130 for exams. Mean costs per year included surgical royal college subscription (£317), specialty society membership (£336), journals (£79), text books (£245). 7 had completed an MSc (35%), 5 an MD (25%) and 1 (5%) had done both since graduating from medical school (mean cost £12822).

Which specialty do you intend to pursue?	What is your stage of training?
General Surgery: 6 (30%) Trauma and Orthopaedics: 6 (30%) Vascular Surgery: 2 (10%)	Foundation Year 1: 1 (5%) Foundation Year 2: 0 (0%) ST1/CT1/SHO1: 4 (20%) ST2/CT2/SHO2: 2 (10%) ST3/SPR1: 1 (5%) ST4/SPR2: 4 (20%) ST5/SPR3: 2 (10%) ST6/SPR4: 1 (5%) ST7/SPR5: 1 (5%) ST8/SPR6: 1 (5%) Post CCT: 1 (5%) Research Post: 2 (10%)

Demographic	Military Trainees
Number	20
Male: Female (%)	14:6 (70:30%)
Mean Age (years)	33.8 (range 27-41)
LTFT Trainees (%)	0 (0)
Academic Trainees (%)	1 (5%)

Appendix Four: Tables of costs to the trainee in each surgical specialty

Using the published requirements for progression through surgical training we have provided an estimated breakdown of the costs to the trainee in each surgical specialty. The following tables of costs assume straight progression through F1-ST8 without taking time out for LTFT, post-graduate degrees or other career breaks. These prices are correct as of November 2016. July 2016 CCT guidance used as per JCST website. Conference costs do not include travel or subsistence.

BMA= British Medical Association, CCT= Certificate of Completion of Training, CST= Core Surgical Trainee, CT= Core Training (year), FP=Foundation Programme, FRCS= Fellowship of the Royal College of Surgeons, GMC= General Medical Council, HST=Higher Surgical Trainee, JCST= Joint Committee on Surgical Training, MRCS= Membership of the Royal College of Surgeons, RCS= Surgical Royal College, RCSEng= Royal College of Surgeons of England, RCPSCG= Royal College of Physicians and Surgeons of Glasgow, ST= Specialty Trainee (year).

Cardiothoracic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£710
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
RCSEng Specialty Skills in Cardiothoracic Surgery Course	£774
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
National or international conference attendance each year of training e.g. Society for Cardiothoracic Surgery conference booked as early bird rate as a member	£205 per year for 2 years as CST, £305 per year for 6 years as HST
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society for Cardiothoracic Surgery	£100 per year for 2 years as CST, £200 per year for 6 years as HST
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24039.00**

General Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (and completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
Course relevant to specialist interest e.g. RCSEng specialty skills in coloproctology	£585
ATLS revalidation to keep valid at time of certification	£350
Attendance at 4 national or international conferences during training e.g. Association of Surgeons of Great Britain and Ireland conference booked as early bird rate as a member	£260 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Association of Surgeons of Great Britain and Ireland	£81 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£22488.50**

Neurosurgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650.00
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724.00
Mandatory for CCT	
FRCS examination (including completion fee)	£2269.00
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354.00
Training and Education Course e.g. RCSEng Training the Trainers	£702.00
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Attendance at 4 national or international conferences during training e.g. Society of British Neurological Surgeons conference booked as early bird rate as an affiliate member	£150 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society of British Neurological Surgeons	£145 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21625.50**

Oral and Maxillofacial Surgery

Requirements	Cost
Essential for Surgical Training	
Bachelor of Dental Surgery e.g. University of Liverpool BDS graduate entry	£9000 for 4 years
JCST fee (for 7 years)	£255 per year for surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
GDC registration (for 9 years)	£890 per year
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Acute Life-threatening Events Recognition and Treatment (ALERT) Course	£95
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Emergency Skills Course e.g. RCSEng Emergency Skills in Oral and Maxillofacial Surgery	£877.50
Basic Plating Course e.g. AO basic OMFS plating course	£499
Head and Neck Anatomy Course e.g. RCSEng basic surgical anatomy of the head and neck	£414
Surgical Dermatology Course e.g. RCSEd Facial aesthetics course	£785
Orthognathic Course e.g. 6th biennial Glasgow course	£495
Microvascular Course e.g. University of Liverpool microvascular course	£1400
Complex/Advanced Trauma Course inc. condylar fractures and orbital access e.g. SORG course	£1500
3 advanced sub-specialty courses:	
e.g. Establishing a modern salivary gland practice	£1250
e.g. Newcastle functional septorhinoplasty and facial plastics cadaveric course	£950
e.g. Controversies in the management of head and neck cancer	£275
National or international conference attendance e.g. BAOMS Conference booked as early bird rate as a member *	£200

Other BMA Membership (for 9 years) RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7 Specialty Association Membership e.g. British Association of Oral and Maxillofacial Surgeons Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	 £113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+ £316 per year for 4 years as member, £531 for 1 year as fellow £85 per year for 7 years £1325
TOTAL ESTIMATE	**£71431.50**

* Where no minimum number of attendances documented a minimum of 1 included

Otolaryngology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
Diploma of Otolaryngology Head and Neck Surgery (DO-HNS)	£932.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Advanced Life Support Course	£550
Advanced Paediatric Life Support Course and 2 x ENT courses	see below
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Temporal Bone Dissection Course e.g. Cuschieri Skills Course	£225
Sinus Anatomy and Surgical Dissection Course e.g. Cuschieri Skills Course	£275
Head and Neck Surgery Course (including LASER) e.g. RCSEd Head and Neck Course Module 1 and 2	£850 and £1050
Septorhinoplasty and Facial Plastics Surgery Course e.g. NSTC Course	£350
Advanced Paediatric Life Support Course	£395
National or international conference attendance e.g. BACO Conference booked as an ENT-UK member *	£825
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. ENT-UK	£210 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£25218.50**

* Where no minimum number of attendances documented a minimum of 1 included

Paediatric Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Paediatric Life Support Course	£395
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Association of Paediatric Surgeons conference booked as early bird rate as a member *	£150
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Paediatric Surgeons	£110 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21640.50**

* Where no minimum number of attendances documented a minimum of 1 included

Plastic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. BAPRAS	£150 per year for 7 years (first year membership free)
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£20561.50**

Trauma and Orthopaedic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Trauma Life Support Course (ATLS)	£650
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Basic Course on Fracture Management e.g. RCPSCG principles of casting for orthopaedic trainees	£20
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Orthopaedic Association conference booked as a member *	Free
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Orthopaedic Association	£152 per year for 2 years as CST, £166 per year for 2 years as ST3-4, £204 per year for 2 years as ST5-6, £240 per year for 2 years as ST7-8
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21405.50**

* Where no minimum number of attendances documented a minimum of 1 included

Urology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 7 years)	£255 per year of surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	£670.50
RCSEng Basic Surgical Skills Course (BSS)	£650
Advanced Trauma Life Support Course (ATLS)	£724
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Urodynamics Course e.g. Belfast Training Academy Course	£187.50
Paediatric Urology Course e.g. BAPU Course	£295
Spinal Injuries Course e.g. Princess Royal Spinal Unit Course	£450
Emergency Urology Course e.g. East of England Emergency Urology Course	£65
Attendance at 1 national or international conference every 2 years of training e.g. British Association of Urological Surgeons Conference booked as early bird rate as a member	£100 per year for 3 years
Other	
BMA Membership (for 9 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 4 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Urological Surgeons	£160 per year for 7 years
Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	£1325
TOTAL ESTIMATE	**£20719**

Vascular Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance per year e.g. Vascular Society Conference booked as a member at early bird rate	£375 per year for 8 years
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Vascular Society	£115 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24135.50**

STROBE Statement for A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract PAGE 1 □
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found PAGE 2-3 □
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported PAGE 5-6 □
Objectives	3	State specific objectives, including any prespecified hypotheses PAGE 6 □
Methods		
Study design	4	Present key elements of study design early in the paper PAGE 7-10 □
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection PAGE 7-10 □
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants PAGE 7-10 □
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable

		PAGE 7-10 □
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias PAGE 4, 7-10 □
Study size	10	Explain how the study size was arrived at PAGE 10 □
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why PAGE 7-10 □
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding PAGE 10 □
		(*b*) Describe any methods used to examine subgroups and interactions PAGE 10 □
		(*c*) Explain how missing data were addressed PAGE 9 □
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy PAGE 7-10 □
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed PAGE 10-12 □
		(b) Give reasons for non-participation at each stage PAGE 10-12 □
		(c) Consider use of a flow diagram N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders PAGE 10-12 □
		(b) Indicate number of participants with missing data for each variable of interest PAGE 10-13 □
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures PAGE 10-13 □
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included PAGE 10-13 □
		(*b*) Report category boundaries when continuous variables were categorized PAGE 10-13 □
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives PAGE 14-18 □
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias PAGE 4 □
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence

		PAGE 14-18
Generalisability	21	Discuss the generalisability (external validity) of the study results PAGE 14-18
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based PAGE 19

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE IN THE UK AND IRELAND

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-018086.R3
Article Type:	Research
Date Submitted by the Author:	23-Sep-2017
Complete List of Authors:	O'Callaghan, John; Association of Surgeons in Training Mohan, Helen; Association of Surgeons in Training Sharrock, Anna ; Association of Surgeons in Training Gokani, Vimal; Association of Surgeons in Training Fitzgerald, J; The Association of Surgeons in Training, Williams, Adam; Association of Surgeons in Training Harries, Rhiannon; Association of Surgeons in Training
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Surgery
Keywords:	MEDICAL EDUCATION & TRAINING, SURGERY, HEALTH ECONOMICS, surgical training, cost of training, SURGICAL EDUCATION

A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE IN THE UK AND IRELAND

John M O'Callaghan, Helen M Mohan, Anna E Sharrock, Vimal J Gokani, J Edward Fitzgerald, Adam P Williams, Rhiannon L Harries; on behalf of the Council of the Association of Surgeons in Training

Corresponding author: Rhiannon.harries@doctors.org.uk

Address: Association of Surgeons in Training, 35-43 Lincoln's Inn Fields, London WC2A 3PE

http://www.asit.org

http://twitter.com/ASiTofficial @ASiTofficial,

Running head: The cost of surgical training

Category: Original research

Funding: Nil

Keywords: surgical training, cost of training, surgical education, medical education, health economics

Word count: **3951**

Abstract

Objectives:

Applications for surgical training has declined over the last decade and anecdotally, the costs of training at the expense of the surgical trainee are rising. We aimed to quantify the costs surgical trainees are expected to cover for postgraduate training.

Design:

Prospective, cross-sectional questionnaire based study.

Setting/Participants:

A non-mandatory online questionnaire for UK-based trainees was distributed nationally. A similar national questionnaire was distributed for Ireland, taking into account differences between the healthcare systems. Only fully completed responses were included.

Results:

There were 848 and 58 fully completed responses from doctors based in the UK and Ireland, respectively. Medical students in the UK reported a significant increase in debt on graduation by 55% from £17,892 (2000-2004) to £27,655 (2010-2014), $p<0.01$. 41% of specialty trainees in the UK indicated that some or all of their study budget was used to fund mandatory regional teaching. By the end of training, a surgical trainee in the UK spends on average £9,105 on courses, £5,411 on conferences and £4,185 on exams, not covered by training budget. Irish trainees report similarly high costs. Most trainees undertake a higher degree during their postgraduate training. The cost of achieving the mandatory requirements for completion of training ranges between £20,000-£26,000 (dependent on specialty), except oral and maxillofacial surgery, which is considerably higher (£71,431).

Conclusions:

Medical students are graduating with significantly larger debt than before. Surgical trainees achieve their educational requirements at substantial personal expenditure. To encourage graduates to pursue and remain in surgical training, urgent action is required to fund the mandatory requirements and annual training costs for completion of training and provide greater transparency to inform doctors of what their postgraduate training costs will be. This is necessary to increase diversity in surgery, reduce debt load and ensure surgery remains a popular career choice.

Strengths and Limitations of this Study

- This national study provides a large cross-sectional data set on the experience of the costs of surgical training by surgical trainees across all ten surgical specialties in the UK and Ireland
- The costs analysed provided a comprehensive overview of the breadth and depth of financial costs incurred by trainees.
- The wide-distribution of the survey and breadth of responses increased the likelihood that it is representative of trainee experience.
- We recognise that there is a significant number of surveys excluded due to incompletion, which we believe to be related to the need for accurate costings to compete the survey. However, the overall number of completed responses was higher than required to power the study.
- It is recognised that some costs could be subject to recall bias or an element of selection bias, in that those with significantly more debt may be more likely to respond, however the figures reported are largely consistent with the calculations we have made using the current prices of exams, courses and society memberships to verify the results.

Introduction

The number of trainees applying for surgical training has declined over the last decade[1]. Many factors including low workforce morale, poor work-life balance and recent contractual issues may act as a deterrent to medical students considering a career in surgery[2]. The cost of completing the mandatory postgraduate requirements to secure a higher surgical training programme post has been estimated to be between £2,735 and £20,780, dependent on surgical specialty (average £3,360) compared with medicine £2,815 and anaesthetics £2,215[3]. Following entry to higher surgical training, there are considerable ongoing costs incurred by trainees in order to meet the requirements for completion of training as mandated by the Joint Committee on Surgical Training (JCST). These include educational courses, conference attendance, Royal College membership and fellowship examinations and annual subscriptions, and specialty society membership subscriptions. In addition, trainees pay annual expenses such as registration with the respective regulatory bodies, the UK General Medical Council (GMC) or Irish Medical Council (IMC), medical indemnity insurance costs, and the JCST fee (paid by trainees in the UK).

In 2007, The Association of Surgeons in Training (ASiT) conducted a survey of UK surgical trainees, to assess the financial costs to trainees in surgical training[4]. The results demonstrated that the mean debt on qualification from medical school was over £20,000. However, in recent years there have been many new challenges facing the current generation of surgical trainees, including increased student debt, secondary to a rise in annual university tuition fees of up to £9,000 per annum[5]. It has previously been calculated that medical students graduating currently are unlikely to repay their student loan debt before reaching the 30-year point at which it is written off[6]. The salaries of male and female medical graduates diverge such that by the age of 55, the average male medical school

graduate earns 35% more[6]. This means that the average female graduate repays more when debt is low, but a lower amount when debt is high, compared to male graduates[6]. The cost of living has also increased; in the ten years, preceding November 2016 the UK Consumer Price Index (CPI) rose a total of 23.8%[7].

To assess the current situation, we repeated a refined study, with a broader remit and more in depth assessment of cost pressures on trainee surgeons in both the UK and Ireland. The main aim was to assess the true financial cost of training to the surgical trainee in each of the ten surgical specialties.

Methods

Participants and setting

Postgraduate surgical training in the UK and Ireland consists of a minimum of 8 years of training (except for oral and maxillofacial surgery (OMFS) and urology which is a minimum of 7 years) following completion of the initial post-qualification two-year Foundation Programme (or intern year in Ireland) **Figure 1**. Competitive entry occurs prior to both Core and Higher specialist training levels, except for neurosurgery, cardiothoracic surgery and Oral and maxillofacial surgery (OMFS) in the UK (and trauma and orthopaedics in Scotland), where 'run-through' training (no separate selection process between core and higher specialist training) from Core level exists. Core surgical knowledge is assessed by the Intercollegiate Membership of the Royal College of Surgeons (MRCS) examination and specialty specific knowledge during the later phase of higher surgical training is assessed by the Intercollegiate Fellowship of the Royal College of Surgeons (FRCS) examination.

In the UK and Ireland, the Joint Committee on Surgical Training (JCST) are responsible for curriculum development and quality assurance of all the surgical training programmes in the ten defined surgical specialities (cardiothoracic surgery, general surgery, neurosurgery, OMFS, otolaryngology, paediatric surgery, plastic surgery, trauma and orthopaedics, urology and vascular surgery). All surgical trainees are required to register with the JCST and to pay an annual fee (£255 at time of submission) that has more than doubled between 2010 and 2016. This fee supports the running costs of the JCST to manage trainee enrolment and recommendation for certification; the work of each of the ten surgical specialties 'Specialty Advisory Committee' (SACs); curriculum review and development and website support. The

JCST training fee is covered for trainees in Ireland directly by funding received by the RCSI from the Health Service Executive (HSE).

In the UK, Local Education Training Boards (LETBs) provide funding to Local Education Providers (essentially the hospital where a trainee is employed) to cover the direct costs of delivering education and training. This sum includes two components: firstly, salary support of 50% of each doctor's basic salary; the second component is a placement fee of £12,400 per year, per trainee, to fund all costs involved in delivering education and training needs. It is from this placement fee that trainees apply for study funding support towards courses and conferences essential to their training, often referred to as 'study leave budget', with a restricted amount available dependent on the LETB. Funding for military trainees in the UK regular Defence Medical Services (DMS) is overseen by External Education and Training Support (EETS) within the Defence Deanery. Funding for training courses for military trainees is therefore at the discretion of the Defence Consultant Advisor and Defence Deanery[8]. In Ireland, the RCSI receives funding from HSE to provide surgical training, which covers the cost of the JCST fee, delivering the curriculum, human factors and operative skills training days. However, other elements essential for CCT (Certificate of Completion of Training) are not directly provided. More details of funding for Irish trainees is given in **Appendix 1**.

At the time of survey distribution, there were 5,323 surgical trainees in the UK and 438 surgical trainees in Ireland[9].

Questionnaire design and distribution

A novel 54-item, survey tool was developed, consisting of free-text, binomial and variable scale responses. The questionnaire was designed with reference to previously published guidelines on conducting questionnaire research[10-12]. The online platform *SurveyMonkey®* (Palo Alto, CA, USA, www.surveymonkey.com) was used to build the survey. All individual question items were compulsory. No individually identifiable information was collected; therefore, non-responders could not be identified for follow-up. No incentives were offered for participation. A link to the online survey was distributed to members of ASiT, surgical specialty associations, and local and national mailing lists of surgical trainees. All surgical trainees in the UK including foundation doctors were included, as appropriate to the level of analysis. A modified version of the survey was circulated to ASiT members and surgical trainees in Ireland, which reflected relevant differences in health systems and training. Interns were excluded from distribution of the survey in Ireland as contact details were only available for those registered as surgical trainees with RCSI. Data collection took place from 2nd December 2015 to 26th April 2016. The ethical dimensions of this non-mandatory, anonymous evaluation survey were considered and no concerns were identified. Participants consented to the use of the analysis, distribution and publication of anonymised grouped results. A copy of the survey can be found in **Appendix 2.**

This study was undertaken by ASiT (http://www.asit.org), a pan-surgical specialty professional body and registered charity in the UK (no: 274841) working to promote excellence in surgical training for the benefit of junior doctors and patients alike. ASiT is

independent of the National Health Service (NHS), Surgical Royal Colleges, and specialty associations.

Data analysis

Only fully completed questionnaires were included in the analysis. Due to the differing healthcare structures and funding systems of postgraduate education and training in UK and Ireland, a modified version of the survey was used for Ireland and the results are presented separately. Military trainees were excluded due to low numbers and a separate training funding structure. Data was graphed and analysed in *Excel®* (Microsoft, USA). Significance testing for continuous variables was conducted using Mann-Whitney U Test in *Stata®* (Statacorp, USA); statistical significance was accepted at $p<0.05$. Survey sample size calculations were based on standard published formulae and assuming a population of 6000 individuals, with alpha=0.01, 209 responses would be sufficient for margin of error of 0.03[13]. For readability, all values are presented to the nearest pound (£) or euro (€). We have used the exchange rate as accessed on 13th January 2017 of £0.87= €1.00 to provide comparisons between the two currencies[14]. The study results are reported in concordance with STROBE guidance on observational studies[15]. Results regarding costs are presented displaying trainees year of graduation in blocks of 5 years to show trends over time.

Costs of CCT to the trainee in each surgical specialty

Using guidance available from the JCST, the total cost of achieving the mandatory and desirable requirements for CCT in each of the surgical specialties was also calculated. Where conference attendance was mandated, but no exact minimum number described, the cost of at least one attendance during the training period was calculated. For courses which

required re-validation at the end of training, the reduced course cost of re-validation rather than a full attendance was used. Course costs from recognised bodies, such as the BMA and Surgical Royal Colleges, were used in all calculations, where applicable. Conference costs were calculated using the reduced rates available to society members or early registrations where possible.

Results

Of 1603 surveys submitted, a total of 868 fully completed responses were included in the analysis from doctors based in the UK, and 58 fully completed responses from doctors based in the Republic of Ireland. Respondent demographics by country of work are detailed in **Table 1.**

United Kingdom-specific responses

For the purposes of monetary analysis UK military doctors (n=20) were excluded from the main analysis, however a summary of military doctors' survey findings can be found in **Appendix 3**. This resulted in a total of 848 respondents for analysis. Of 848 respondents, 751 (88%) graduated from medical school in the UK. 89% (672) of these UK medical school graduates graduated with debt, with a mean of £25,404. The average debt by year of graduation has increased by 55% from £17,892 to £27,655 comparing graduates in the most recent generation (2010-2014) with those graduating between 2000 and 2004 ($p<0.01$) **Figure 2**.

There were 659 specialty trainee respondents from the UK (grades CT/ST1 to ST8) **Table 2**. Of these, 93% (618) responded that they were currently entitled to a study leave budget. The median value was £600 per annum (range £500-£835). Three LETBs reported no defined budget limit (Yorkshire and Humber, South West and Thames Valley). 41% of all respondents in specialty training indicated that some (31% of respondents) or all (10% of respondents), of their study budget was used to fund mandatory regional teaching.

By the end of training, a surgical trainee in the UK can expect to have spent on average £9,105 on courses, £5,411 on conferences and £4,185 on exams (£18,701) that they have

not been reimbursed through any source. Expense per year on conferences has marginally increased from £331 to £414 comparing older graduates with the more recent generation (2000-2004 versus 2010-2014, p=0.28). However, course expenses per year have increased significantly; the most recent graduates from medical school, graduating in the years 2010-2014, have spent on average £1,311 per year. This is an increase of 121% on the annual amount spent by medical school graduates graduating between 2000 and 2004 (p<0.01) **Figure 3**.

400 respondents (47%) from the UK have undertaken a postgraduate degree since graduating from medical school, with this proportion rising by the later stages of training (ST7-8 and post-CCT fellow) to 68% (96/141). The average cost of the degree, including university fees and loss of earnings was estimated by respondents at £18,009; with an MD/PhD being the most popular higher degree completed (24.8%, mean cost £27,882), followed by MSc (21.3%, mean cost £11,090).

732 respondents from the UK (86%) and 340 of 349 trainees level ST3-ST8 (97%) pay an annual subscription to one of the four surgical royal colleges (mean £305 for all trainees, mean £386 for ST3-ST8). 700 respondents (82%) pay annually to their SAC-defined specialty society (mean £343) and 672 (79%) are members of the British Medical Association. Over the last year, the mean amount spent on journals was £72 and on textbooks was £212.

Ireland-specific responses

Of the 58 respondents, 57 were currently working in Ireland and one was on fellowship in the USA **Table 1 and Table 3**. 25 (43%) reported that they were currently entitled to a training fund **Appendix 1**. In the past year, trainees spent on average £1278 (€1469) on mandatory courses, including travel expenses to courses, many of which are outside of

Ireland, of which a mean of £784 (€902) euros was not reimbursed. Trainees spent a mean of £1,977 (€2,321) on non-mandatory courses, of which a mean of £1,850 (€2,164) was not reimbursed. In the past year, respondents had spent a mean of £1,153 (€1,353) on attending conferences, of which a mean £1,005 (€1,183) was not reimbursed. Since graduation, across all grades trainees had spent a mean £4,829 (€5,669) on examinations, of which a mean £3,402 (€4,004) was not reimbursed. For senior trainees (ST8), an average £9,796 (€11,500) had been spent on exams, of which £5,396 (€6,351) was not reimbursed.

47 respondents (n=81%) from Ireland had undertaken a post-graduate degree since graduating from medical school. The MCh was the most popular post-graduate degree (n=15, 26%), followed by the MSc (n=13, 22%) and MD (n=11, 19%).The average estimated total monetary cost of undertaking a postgraduate degree to the trainee, including course fees and loss of income, was £22,093 (€25,936).

Estimated costs of training (UK and Ireland) using CCT essential and desirable criteria

The costs range between £20,000 (€23,479) to £26,000 (€30,523) depending on surgical specialty, except OMFS, which is considerably higher (£71,431 or €83,858) due to the dual qualification in medicine and dentistry as well as having significantly more mandatory training courses than other specialties **Appendix 4**.

Only the minority of the costs are tax deductible, add to this the estimated cost of a postgraduate degree (£18,009 or €21,142), which many surgical trainees will also undertake at their own expense, and the estimated costs to the trainee increase to approximately £40,000 (€46,958, excluding OMFS).

Discussion

This study has shown that individual doctors incur many thousands of pounds in personal expense after graduating from medical school to pursue a career as a surgeon and to meet the requirements to complete surgical training. These costs are incurred in addition to the significant debt built up by most medical school graduates, a debt burden likely to rise further as a greater proportion of students graduate under increased student tuition fees in the UK. Many of the costs paid by the trainee towards their training are not recognised as tax deductible, yet are incurred to cover requirements that are essential to progress through training schemes, and therefore to maintain one's livelihood. Consultant surgeons-to-be now spend considerably more per year on courses than in the past, and these now represent the single largest training cost, according to our results. Efforts to make surgery an attractive and inclusive career must include an equitable distribution of training costs to the trainee.

Individual trainees spend significant amounts on courses that are not actually mandatory as documented in CCT requirements. We speculate there are two reasons for this; firstly, surgical trainees will undertake courses above and beyond the minimum requirements to develop their skills. Gaps in knowledge and experience delivered in current training posts are likely to contribute to this, such that simulation courses are necessary to address training needs. As such, issues with training programmes failing to meet trainee's educational needs are instead transferred to trainees, who still obtain this necessary training at their own cost. Secondly, to be competitive for higher surgical training and for consultant posts, trainees may undertake additional courses and extracurricular activities.

We have identified a regional variation in what amount is available to trainees, despite the standardised placement fee from the LETB. Study budgets for specialty trainees were lower than the values released in response to the recent FOI request by Varley *et al* in 7 out of 10 LETBs (North Central, South and North West London, North West England, East of England, Kent Surrey and Sussex and North East England), and equal in three LETBs (East Midlands, Wales, West Midlands)[16]. It is desirable that study budgets are standardised across the UK, in both amount and that they should not be top-sliced to provide mandatory regional teaching, and in the longer term all items deemed essential for CCT (including the JCST fee), should be funded directly, without expense to the trainee. ASiT has previously highlighted this issue of uncontrolled geographical variation, calling for an equitable approach through national standardisation[17].

Irish trainees bear similar high costs in surgical training to their UK counterparts, not surprisingly given that JCST requirements are the same. The higher cost of courses for Irish trainees may reflect increased travel and accommodation expenses, as many courses require travel outside of Ireland and the exclusion of Irish interns from the study, who are less likely to have undertaken expensive technical skills courses. The higher cost of exams may reflect in part a higher proportion of Irish trainees who undertake USMLE examinations to pursue a fellowship in the USA, as well as increased travel expenses to intercollegiate examinations often held in the UK. While funding is available to reimburse some of these expenses, it falls short of being sufficient to avoid trainees bearing the greatest burden of the cost. These costs are on top of annual mandatory costs such as membership or fellowship of RCSI. These are a significant additional cost- for example, the 2016/2017 subscription rate is £315 (€370) for fellows and £226 (€265) for members, and the annual

Irish Medical Council(IMC) retention fee (£477 (€560) for those registered for less than 3 years and £515 (€605) for those registered for more than 3 years). Of note, the payment for the Irish Medical Council (IMC) is an annual payment and cannot be split across the year which places a significant financial burden on trainees at the time of the year when they move jobs and incur considerable additional expenses.

68% of later stage higher surgical trainees in the UK and 81% of Irish trainees report obtaining a higher degree. This was associated with an average cost estimated by respondents of over £18,000 and £22,000 in the UK and Ireland, respectively. Whilst it is not deemed mandatory by the JCST to undertake a higher degree within surgical training, there are a number of reasons why surgical trainees choose to undertake one. Firstly, it is required in order to practice as an academic consultant surgeon, and secondly, a significant proportion of trainees will undertake one in order to make themselves competitive for consultant appointment.

Doctors need to be aware in advance of what their chosen pathway is likely to cost them, alongside the starting salary for consultant posts when they complete their training (ranging from £76,761 in the UK and £95,775 (€105,000) in Ireland[18,19]). This study has provided the most detailed assessment yet for both UK and Irish surgical trainees. It is difficult to compare the costs to other medical specialties as few similar studies have been undertaken in other disciplines. One calculation for the training costs towards the completion of CCT in Obstetrics and Gynaecology estimated slightly less than for surgical trainees, at £14,224[20]. Another calculation for only the early stages of training in other specialties was also slightly less for medicine and anaesthetics, than surgical specialties[3]. Comparisons to other professional careers, such as solicitors, are also difficult, but working in the private sector

has additional benefits. After qualifying with a law degree, solicitors must complete a Legal Practice Course (LPC), which costs £8,500-£15,000 dependent on type of course and location[21]. It is however possible to have this cost covered by a law firm if obtaining a training contract in advance, and many law firms will also provide a living expense grant of several thousand pounds per year[22].

Research by the University of Kent for the Department of Health has provided cost-estimates for the training of various doctor grades from the start of medical school onwards[23]. This work found that the total cost of training a consultant was £564,112, with some contributions that came largely from the individual (such as undergraduate university fees, lost earnings, and postgraduate training fees) and others that came predominantly from the state (clinical placement, tuition and replacement)[23]. It is not possible from the document to disentangle the values independently contributed by each party.

An important consideration frequently overlooked in these analyses relates to the hospital activity performed by trainees generating hospital income. Doctors in training have a value as well as a cost, which should be taken into account to offset such cost-estimates. Two UK-based studies have sought to quantify this within surgical training[24,25]. In general surgery, an analysis of 1,184 out-patient clinic consultations demonstrated that trainees delivered a quarter of all out-patient related income, averaging £36,452 per trainee[24]. This was sufficient to offset 95% of the trainee's average basic salaries. Within ENT surgery, clinical activity undertaken by SHO grade doctors was calculated to generate an annual net income of £73,048 (4.3 times higher than their employment costs)[25]. Registrars generated an annual net income of £121,587 (5.4 times their employment cost). In total, 94% of trainees included in this analysis generated more hospital income than their employment costs.

Given the benefit derived from hospitals from trainee-related clinical activity, it is reasonable that a proportionate amount of the associated costs of training should be borne by the employing hospitals.

The costs analysed in this study present a comprehensive overview of the breadth and depth of costs incurred by trainees. The survey was widely distributed across regions, specialties and grades, increasing the likelihood that it is representative of trainee experience. However, these results are specific to the UK and Ireland and caution should be taken when comparing to other national surgical training systems due to international variability of the requirements for completion of training, length of training programme, differing training costs and salaries. A significant number of surveys were excluded due to incompletion, which we believe to be related to the need for accurate costings to compete the survey. However, the overall number of completed responses was higher than required to power the study. It is also recognised that some costs could be subject to recall bias or an element of selection bias, in that those with significantly more debt may be more likely to respond, however the figures reported are largely consistent with the calculations made using the current prices of exams, courses and society memberships **Appendix 4**. Future studies should seek to understand the balance of costs incurred by the health system in supporting training, which are poorly understood, the influence of training cost on career choice, and wider international comparisons on the costs of training in different health systems.

Conclusions

Medical students are graduating with increasing debt. Surgical trainees achieve their educational requirements through considerable personal expenditure, with a total estimated monetary cost to the trainee in the region of £40,000 (€47,000). The Certificate of Completion of Training in surgical specialties comes with significant costs, which until now have not been accurately estimated. The cost goes far beyond the national training fee paid to the JCST annually in the UK, and greater transparency is immediately necessary to inform doctors of what their postgraduate training costs will be across all specialties. We strongly believe that the costs of mandatory surgical training should be covered by the Local Education and Training Boards, including the JCST fee and the costs of achieving CCT mandatory requirements. Furthermore, funding should be made available for non-mandatory surgical educational activity deemed beneficial by the trainee's educational supervisor, to ensure surgeons are trained to the highest level to provide excellent care. This is necessary to increase diversity in surgery, reduce debt load and make surgery a popular career choice again.

Acknowledgements

We thank all those trainees who took the time to complete the survey. We acknowledge the work done by Edward Fitzgerald and Charles Giddings on the previous 2007 costs of surgical training survey.

Contributors

RLH and JEFF conceived the study. All authors designed the questionnaire. JMOC collected the data. JMOC, HMM and RLH analysed the data. All authors were responsible for compiling and editing the manuscript, and approving the final article.

Competing interests

The authors are either current or previous surgical trainees, and current or past elected members of the Council of the Association of Surgeons in Training (Registered Charity No. 274841). JEFF is an employee of KPMG Global Health Practice, Honorary Clinical Advisor to the Lifebox Foundation charity, and a Trustee of the SURG Foundation research charity. The authors have no other relevant financial or personal conflicts of interest to declare in relation to this paper.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Data sharing statement

Summary data is available from the corresponding author at president@asit.org. Consent to data sharing was sought prior to survey completion, and the presented data are anonymised grouped, hence risk of individual identification is low.

Table 1. Basic Demographics. Respondents divided by country of work.

Demographic	United Kingdom	Ireland
Number	848	58
Male: Female (%)	518:327 (61.3:38.7, 3 NR)	35:23 (60:40)
Mean Age (years)	31.6 (range 23-55)	31.3 (range 25 to 41)
LTFT Trainees (%)	36 (4.3)	0
Academic Trainees (%)	69 (8.1)	N/A

NR= Not Reported, LTFT= Less than full time training

Table 2. Specialty, stage of training and LETB (Local Education and Training Board) for respondents from UK.

Which specialty do you intend to pursue?	What is your stage of training?	In which LETB/Deanery do you work?
Cardiothoracic Surgery: 32 (3.8%) General Surgery: 296 (34.9%) Neurosurgery: 28 (3.3%) Oral and Maxillofacial: 19 (2.2%) Otolaryngology: 75 (8.8%) Paediatric Surgery: 29 (3.4%) Plastic Surgery: 66 (7.8%) Trauma and Orthopaedics: 172 (20.3%) Vascular Surgery: 59 (5.4%) Urology: 59 (7.0%) Other/Unsure: 26 (3.1%)	Foundation Year 1: 12 (1.4%) Foundation Year 2: 63 (7.4%) ST1/CT1/SHO1: 148 (17.5%) ST2/CT2/SHO2: 96 (11.3%) CT3/SHO3: 10 (1.2%) ST3/SPR1: 78 (9.2%) ST4/SPR2: 59 (7.0%) ST5/SPR3: 77 (9.1%) ST6/SPR4: 59 (7.0%) ST7/SPR5: 60 (7.1%) ST8/SPR6: 67 (7.9%) Post CCT: 17 (2.0%) Clinical Fellow: 35 (4.1%) Research Post:53 (6.3%) Other: 14 (1.7%)	Scotland: 70 (8.3%) Northern Ireland: 49 (5.8%) Wales: 51 (6.0%) North East: 42 (5.0%) North West: 80 (9.4%) Yorkshire and Humber: 55 (6.5% East Midlands: 51 (6.0%) West Midlands: 70 (8.3%) East of England: 61 (7.2%) Thames Valley: 41 (4.8%) Kent, Surrey and Sussex: 41 (4.8%) Wessex: 41 (4.8%) South West: 61 (7.2%) North East and Central London: 43 (5.1%) North West London: 44 (5.2%) South London: 46 (5.4%)

CT= Core Training, NCE = North Central and East London, SPR= Specialist Registrar, ST= Specialist Training.

Table 3. Specialty and stage of training for respondents from Ireland.

Which specialty do you intend to pursue?	What is your stage of training?
Cardiothoracic Surgery: 2 (3%) General Surgery: 22 (38%) Neurosurgery: 1(2%) Oral and Maxillofacial: 0 Otolaryngology: 2 (3%) Paediatric Surgery: 0 Plastic Surgery: 3(5%) Trauma and Orthopaedics: 20(34%) Vascular Surgery: 2(3%) Urology: 6 (10%)	ST1/CT1/SHO1: 13 (22%) ST2/CT2/SHO2: 10 (17%) ST3/SPR1: 12 (21%) ST4/SPR2: 5 (9%) ST5/SPR3: 4 (7%) ST6/SPR4: 2 (3%) ST7/SPR5: 1 (2%) ST8/SPR6: 3 (5%) Clinical Fellow: 1 (2%) Research Post: 1 (2%)

CT= Core Training, SPR= Specialist Registrar, ST= Specialist Training.

References

1. Joint Committee on Surgical Training National Selection Leads Group, Verbal Communication 2016.

2. Jaunoo SS, King TR, Baker RF, Adama HL. A national survey of reasons why students and junior doctors choose not to pursue a career in surgery. Annals of the Royal College of Surgeons 2014;**96 (Suppl)**:192-94

3. Stroman L, Weil S, Butler K, McDonald C. The cost of a number: can you afford to become a surgeon? The Bulletin of the Royal College of Surgeons of England 2015;**97**(3):107-11 doi: 10.1308/147363515x14162390057944[published Online First: Epub Date]|.

4. The Cost of Surgical Training, Position Statement. London, UK: Association of Surgeons in Training, 2007.

5. Student Loans in England: Financial Year 2015-16. Glasgow, UK: The Student Loans Company, 2016.

6. Ercolani MG, Vohra RS, Carmichael F, Mangat K, Alderson D. The lifetime cost to English students of borrowing to invest in a medical degree: a gender comparison using data from the Office for National Statistics. BMJ open 2015;**5**(4):e007335 doi: 10.1136/bmjopen-2014-007335[published Online First: Epub Date]|.

7. Statistical bulletin: UK consumer price inflation: Nov 2016: Office for National Statistics, 2016.

8. Defence healthcare education and training (DHET)- Applications polic for defence medical services (DMS) external education and training, 4-6-3. 1.2 ed. Joint Services Publication, 2014.

9. Joint Committee on Surgical Training and Royal College of Surgeons in Ireland, Verbal Communication.

10. Jones TL, Baxter MA, Khanduja V. A quick guide to survey research. Annals of the Royal College of Surgeons of England 2013;**95**(1):5-7 doi: 10.1308/003588413x13511609956372[published Online First: Epub Date]|.

11. Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). Journal of medical Internet research 2004;**6**(3):e34 doi: 10.2196/jmir.6.3.e34[published Online First: Epub Date]|.

12. Woodward CA. Questionnaire construction and question writing for research in medical education. Medical education 1988;**22**(4):345-63

13. JE B, JW K, CC H. Organizational research: determining appropriate sample size in survey research. Information Technology, Learning and Performance Journal 2001;**19**(1):43-50

14. ECB. Euro foreign exchange reference rates: European Central Bank, 2017.

15. von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet (London, England) 2007;**370**(9596):1453-7 doi: 10.1016/s0140-6736(07)61602-x[published Online First: Epub Date]|.

16. Varley I, Kumar A. Cost of training in oral and maxillofacial surgery: beyond the second degree. The British journal of oral & maxillofacial surgery 2016;**54**(8):956-58 doi: 10.1016/j.bjoms.2016.06.006[published Online First: Epub Date]|.

17. Fitzgerald JE, Giddings CE, Khera G, Marron CD. Improving the future of surgical training

and education: consensus recommendations from the Association of Surgeons in Training. International journal of surgery (London, England) 2012;**10**(8):389-92 doi: 10.1016/j.ijsu.2012.03.012[published Online First: Epub Date]|.

18. British Medical Association. Pay scales for Consultants. 2017. https://www.bma.org.uk/advice/employment/pay/consultants-pay-england

19. Health Service Executive. April 1st 2017 Revised Consolidated Payscales. http://www.hse.ie/eng/staff/benefitsservices/pay/Consolidated-Payscales-1st-April-2017.pdf

20. Orr K, Smith M. The financial burden of specialty training. BMJ Careers 2016;**353**(8063):542

21. Costs of qualifying. Secondary Costs of qualifying 2017. http://www.lawsociety.org.uk/law-careers/becoming-a-solicitor/costs-of-qualifying/.

22. TargetJobs- Law. 2017.

23. Curtis L, Burns A. Unit costs of health and social care 2016: Personal social services research unit, University of Kent, 2016.

24. Fitzgerald JE, Ravindra P, Lepore M, Armstrong A, Bhangu A, Maxwell-Armstrong CA. Financial impact of surgical training on hospital economics: an income analysis of 1184 out-patient clinic consultations. International journal of surgery (London, England) 2013;**11**(5):378-82 doi: 10.1016/j.ijsu.2013.02.017[published Online First: Epub Date]|.

25. Clamp PJ, Malpas G, Mason KA, Giddings CE. Surgeons in training – a financial burden or benefit to NHS trusts? Ann R Coll Surg Engl (Suppl) 2011;**93**:22-24

Figure 1. Stages and years of training for UK doctors training to be consultant surgeons. Foundation Doctor Year 1 is the first stage following graduation from university/medical school. In Ireland, the Intern Year is the equivalent of the Foundation Doctor stage in the UK.

Figure 2. Mean debt on graduation from medical school, UK medical schools only. Debt has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), $p<0.01$.

Figure 3. Mean expense per year on courses and conferences that trainees have not been reimbursed. Trainees grouped into 5- year generations by year of graduation. Expense on courses has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), $p<0.01$. Expense on conferences has not significantly increased ($p=0.28$). UK medical school graduates only.

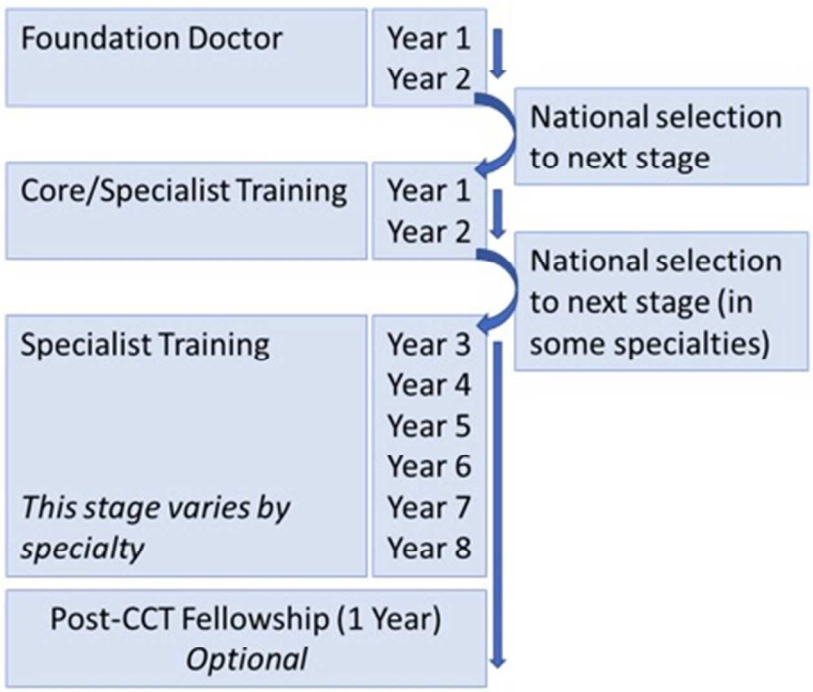

Figure 1. Stages and years of training for UK doctors training to be consultant surgeons. Foundation Doctor Year 1 is the first stage following graduation from university/medical school. In Ireland, the Intern Year is the equivalent of the Foundation Doctor stage in the UK.‼ ┼

44x34mm (300 x 300 DPI)

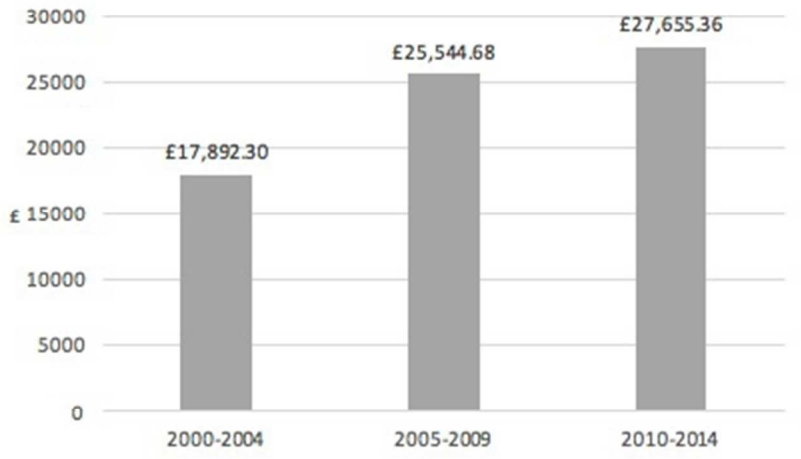

Figure 2. Mean debt on graduation from medical school, UK medical schools only. Debt has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01.‼ †

42x25mm (300 x 300 DPI)

Figure 3. Mean expense per year on courses and conferences that trainees have not been reimbursed. Trainees grouped into 5- year generations by year of graduation. Expense on courses has increased significantly comparing the most recent generation (graduation between 2010 and 2014) with the older generation (graduation between 2000 and 2004), p<0.01. Expense on conferences has not significantly increased (p=0.28). UK medical school graduates only.‼ ┼

43x21mm (300 x 300 DPI)

Appendix One: Sources of Funding for Higher Surgical Trainees in Ireland

In Ireland, as the RCSI directly administers surgical training in Ireland, it receives funding from the HSE to provide surgical training. This includes covering the cost of the JCST fee and delivering the curriculum, including human factors and operative skills training days. However, other elements essential for CCT such as a leadership course, train the trainers course and good clinical practice are currently not directly provided. There are three funding streams available to trainees on higher specialist training, equivalent to the UK "study budget"- the current funding available to HST trainees are:

1. Mandatory Fund- this is provided by the HSE/NDTP and administered by RCSI. It provides funding of up to 1500 euros for approved mandatory courses while in full-time training in Ireland. This fund does not carry forward year on year and cannot be used if for example, on an overseas fellowship. However, its scope is limited as only approved mandatory courses are funded (1).
2. Specialist training fund- this is a fund of 500 euros per year, which accumulates over the course of HST. It can be used for course fees, equipment costs and books etc. It excludes time spent out of full time training, e.g. on an overseas fellowship (1).
3. There is an additional clinical courses and exams fund, where trainees can claim 450 euros for exams or courses on a definitive list of those deemed relevant to the speciality. This includes a narrow list, for example Advanced Trauma Life Support (ATLS). For exams undertaken outside of Ireland, 650 may be claimed. This is directly administered by the HSE/MET (2). The fund will only cover the cost once per trainee per examination.

At the time of this survey, many trainees would have spent time prior to commencing HST completing courses to make themselves competitive to apply for HST at considerable personal cost. In addition, the range of courses covered by the above list currently excludes many courses undertaking by trainees in their surgical training.

It is worth noting that the fund does not adequately cover the cost of courses. For example, the clinical course and examination refund scheme will cover ATLS if undertaken in Ireland. The current cost of ATLS is 875 euros, but the scheme will only cover 450 euros. This does not include travel and accommodation costs to regional centres to complete the course. Similarly, for membership and intercollegiate examinations, this fund does not fully cover the cost, and as these are often held in the UK there are additional travel and accommodation expenses.

References Appendix 1:

1. RCSI Training Funds for SpR Trainees. http://rcsi.ie/files/surgery/docs/20161019040654_Funding-Information-2016.pdf Accessed 16th January 2017
2. HSE-National Doctors Training and Planning. Specialist Training Fund Guidance Document. July 2016.

Cost of Surgical Training Survey 2015

1. Introduction

This survey aims to quantify the additional costs incurred by surgeons in training in pursuit of their career goals. It also aims to quantify the availability of study budgets to cover the required courses and other training needs.

A similar survey was conducted by ASiT in 2007 and we aim to give some comparison of changes over time.

The results will be freely disseminated, including through publication and on the trainee association websites, and provided to Political Leaders, the Royal Colleges, JCST and Specialty Associations.

Completion indicates your consent for this analysis, distribution and publication of anonymised, grouped results. Individual responses remain anonymous.

This survey is for ALL TRAINEES, REGARDLESS OF SURGICAL SPECIALTY in the UK and Republic of Ireland. Students are not included.

It takes approximately 10 minutes to complete.

For more information:

www.asit.org
info@asit.org
@ASiTofficial

Cost of Surgical Training Survey 2015

2. In which country do you work?

* 1. Where do you work currently?

- ○ United Kingdom
- ○ Republic of Ireland
- ○ Other

Other (please specify)

Cost of Surgical Training Survey 2015

3. Pay

* 2. What is your current basic salary (without overtime, to the nearest euro)?
Please do not enter commas or symbols into any boxes relating to numerical values.

To remind you, current payscales are:

Intern € 30257
Senior House Officer
1 € 38839
2 € 40998
3 € 44224
4 € 46334
5 € 50578
6 € 52687
7 € 54746
Registrar
1 € 50578
2 € 52687
3 € 54746
4 € 56260
5 € 58279
6 € 60305
Senior Registrar
1 € 65000
2 € 65000
3 € 65620
4 € 67682
5 € 70061
6 € 72540
7 € 75097
Specialist Registrar
1 € 60404
2 € 61855
3 € 63953
4 € 65000
5 € 66070
6 € 68980
7 € 71878

* 3. What is your current average monthly take home pay after tax (to the nearest euro)?

4. Are you getting paid for your overtime?

- [ ] Yes- rostered only- all of it
- [ ] Yes- rostered only-some of it
- [ ] Yes- rostered and unrostered- all of it
- [ ] Yes-rostered and unrostered- some of it
- [ ] No

* 5. Are you currently entitled to a training fund? (e.g. the SpR mandatory training fund or specialist training fund?)

- [ ] Yes
- [ ] No

Cost of Surgical Training Survey 2015

4. Demographics

* 6. Are you a military trainee?

- Yes
- No

7. What is your gender?

- Male
- Female

* 8. What is your age? (years)

Cost of Surgical Training Survey 2015

5. Current Post

* 9. Do you currently hold an academic post?

- Yes
- No

* 10. Are you in Less Than Full Time Training?

- Yes
- No

11. Are you currently on leave?

- Yes- Maternity/Paternity leave
- Yes- Other leave
- No

* 12. Which specialty do you intend to pursue?

- Cardiothoracic surgery
- General Surgery
- ENT
- Neurosurgery
- Oral and Maxillofacial surgery
- Paediatric Surgery
- Plastic Surgery
- Trauma and Orthopaedics
- Vascular Surgery
- Urology
- Other (please specify)

* 13. What is your current grade?

- F1 or Intern
- F2
- ST1/CT1/SHO1
- ST2/CT2/SHO2
- CT3/SHO3
- ST3/SpR1
- ST4/SpR2
- ST5/SpR3
- ST6/SpR4
- ST7/SpR5
- ST8/SpR6
- Post CCT
- Clinical Fellow
- Research post with no clinical work
- Research post with part-time clinical work
- Part-time clinical non-training
- Other (please specify)

* 14. Under which Deanery/Local Education Training Board do you work?

- Republic of Ireland
- NHS Education for Scotland
- Northern Ireland Medical and Dental Training Agency
- Wales Deanery
- Health Education North East
- Health Education North West
- Health Education Yorkshire and the Humber
- Health Education East Midlands
- Health Education West Midlands
- Health Education East of England
- Health Education Thames Valley
- Health Education Kent, Surrey and Sussex
- Health Education Wessex
- Health Education South West
- Health Education North Central and East London
- Health Education North West London
- Health Education South London

Cost of Surgical Training Survey 2015

6. Current Salary

* 15. WITHOUT BANDING- What is your current basic salary? (gross, to the nearest pound)
Please do not enter commas or symbols into any boxes relating to numerical values.

To remind you, doctors in training pay scales:
England, Northern Ireland and Wales (Scotland in brackets).
FY1
22636 (23205)
24049 (24654)
25461 (26102)

FY2
28076 (28782)
29912 (30664)
31748 (32546)

Specialty Training
30002 (30605)
31838 (32478)
34402 (35093)
35952 (36675)
37822 (38582)
39693 (40491)
41564 (42399)
43434 (44307)
45304 (46215)
47175 (48123)

* 16. What is your current banding as per your contract?

- 1A
- 1B
- 1C
- 2A
- 2B
- 3
- Military- no banding recieved
- Other (please specify)

* 17. Are you currently entitled to a study leave budget?

- Yes
- No
- Military trainee- funding at discretion of Defence Deanery

If yes, please give the approximate value for 12 months (to the nearest pound)

Cost of Surgical Training Survey 2015

7. Debts

* 18. What year did you qualify from medical school?

* 19. Where was your medical school?

- UK
- Republic of Ireland
- Other EU
- Outside EU

* 20. Whilst at medical school have you received any of the following?

- Government student loan
- Military grant
- Bank or other loan
- NHS bursary
- Other bursary
- None of the above

* 21. If, on qualifying from medical, school you had debt (overdraft, credit cards and all student or professional loans, excluding mortgages) - please estimate the total value at that time (to the nearest pound or euro)

* 22. Is some or all of your study budget used to fund mandatory regional teaching?

- Some
- All
- None
- Don't know

* 23. How much in total have you have paid for courses out of your own money that was not reimbursed (cumulative over training, to the nearest pound or euro)?

* 24. How much in total have you paid for conferences out of your own money that was not reimbursed (cumulative over training, to the nearest pound or euro)?

Cost of Surgical Training Survey 2015

8. Expenditures- Course and Exam Attendance

* 25. During your surgical training please identify which of the following courses or exams you have attended/attempted, and how many times:

	Once	Twice	3 x	More	Never
ALS	○	○	○	○	○
APaedsLS	○	○	○	○	○
ATLS	○	○	○	○	○
Basic Surgical Skills	○	○	○	○	○
CCriSP	○	○	○	○	○
USMLE	○	○	○	○	○
RCSEng STEP	○	○	○	○	○
MRCS Parts 1&2/A	○	○	○	○	○
MRCS Part 3/B	○	○	○	○	○
DOHNS	○	○	○	○	○
FRCS Part 1	○	○	○	○	○
FRCS Part 2	○	○	○	○	○
Training the Trainers	○	○	○	○	○

* 26. For any of the following courses or exams you attended, did you receive any funding?

	All	Part	None	Not applicable
ALS	○	○	○	○
APaedsLS	○	○	○	○
ATLS	○	○	○	○
Basic Surgical Skills	○	○	○	○
CCriSP	○	○	○	○
USMLE	○	○	○	○
RCSEng STEP	○	○	○	○
MRCS Parts 1&2/A	○	○	○	○
MRCS Part 3/B	○	○	○	○
DOHNS	○	○	○	○
FRCS Part 1	○	○	○	○
FRCS Part 2	○	○	○	○
Training the Trainers	○	○	○	○

* 27. In the last year, how much have you spent attending MANDATORY courses (to the nearest pound or euro)?

* 28. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 29. In the last year, how much have you spent attending NON-MANDATORY training courses (to the nearest pound or euro)?

* 30. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 31. Since graduation from medical school, how much have you spent on registering for, or attending, post-graduate exams (to the nearest pound or euro)?

* 32. How much of this has been reimbursed through your study budget or other funding (to the nearest pound or euro)?

33. Have you received industry funding to attend any of the following?

	No industry funding received	Minor industry funding (under half expenditure)	Major industry funding (over half expenditure)	Completely industry funded
Courses				
Conferences				
Exams				

Cost of Surgical Training Survey 2015

9. Expenditures- Conferences, Memberships and Subscriptions

* 34. In the last year, how much have you spent attending conferences (to the nearest pound or euro)? Please include the cost of travel, registration fees and accommodation.

* 35. How much of this has been, or will be, reimbursed through your study budget or other funding (to the nearest pound or euro)?

* 36. Have you been refused funding for attending conferences in any of the regions below, for reasons other than your budget has already been used up?

- [ ] UK - my deanery
- [ ] UK - outside my deanery
- [ ] Republic of Ireland
- [ ] I have not been refused funding
- [ ] Other (please specify)

* 37. Are you a member of any of the following professional bodies or have any other professional fees to pay?

- [ ] General Medical Council or Irish Medical Council
- [ ] Royal College of Surgeons of Edinburgh
- [ ] Royal College of Surgeons of England
- [ ] Royal College of Physicians and Surgeons of Glasgow
- [ ] Royal College of Surgeons of Ireland
- [ ] Specialty associations eg ASGBI / SCTS / BOA / ENT-UK / BNS / BAPS / BAOMS / Vascular Society / BAPRAS etc
- [ ] Sub-specialty associations eg AUGIS / ACPGBI / BRS / ALSGBI / BASO / BTS etc
- [ ] Trainee associations eg ASiT / BOTA etc
- [ ] JCST (ISCP training fee)
- [ ] British Medical Association or Irish Medical Organization
- [ ] Hospital Consultants and Specialists Association
- [ ] MDU / MPS / other medical indemnity provider
- [ ] Royal Society of Medicine
- [ ] Journal subscriptions
- [ ] Regional training day fees
- [ ] Others (please specify)

* 38. What is your current annual subscription to your surgical royal college? (to the nearest pound or euro)

* 39. In the last year how much have you spent on specialty society memberships (excluding surgical royal colleges, to the nearest pound or euro)?

* 40. In the last year how much have you spent on journal subscriptions (to the nearest pound or euro)?

* 41. In the last year how much have you spent on text books (to the nearest pound or euro)?

Cost of Surgical Training Survey 2015

10. Out of Training Fellowships and Postgraduate Degrees

* 42. Have you undertaken a post-graduate degree since graduating from medical school?

- [ ] Yes- MD
- [ ] Yes- PhD/DPhil
- [ ] Yes- MSc
- [ ] Yes- MPhil
- [ ] Yes- MEd
- [ ] Yes- MA
- [ ] Yes- MS/MChir
- [ ] No

Yes- Other (please specify)

43. If yes, please estimate the cost of this degree to you personally in monetary terms. Please consider university fees and potential income lost that was not covered by any other funding source.

* 44. Have you undertaken an overseas or other out-of-training fellowship?

- ( ) Yes
- ( ) No

45. If, yes, did this negatively impact on your financial situation, please describe.

Cost of Surgical Training Survey 2015

11. Financial Advice

* 46. Have you previously claimed tax relief from HM Revenue & Customs (or Revenue Tax and customs Ireland/Cain agus Custaim na hEireann) on any of the training and professional costs below? Please select all those that apply.

- [ ] GMC or Irish Medical Council
- [ ] Surgical Royal College
- [ ] MPS/MDU
- [ ] BMA or IMO
- [ ] Specialty Association
- [ ] Journal Subscriptions
- [ ] Exam Fees
- [ ] JCST
- [ ] Courses
- [ ] Conferences
- [ ] I have not claimed tax relief for any of the professional costs above

* 47. Do you have, or have you ever consulted an accountant or financial advisor?

- ( ) Accountant
- ( ) Financial advisor
- ( ) Both
- ( ) Neither

Cost of Surgical Training Survey 2015

12. The Non-Monetary Costs of Surgical Training

Nearly there, this is the last page of questions!

* 48. How many times have you moved house for work?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16 or above

* 49. With regards to childcare please select one of the following:

- I do not have children
- I have had to pay for weekend childcare to allow me to work
- I have had to pay for evening childcare to allow me to work
- I have had to pay for both evening and weekend childcare to allow me to work
- I have children but have not had to pay for evening or weekend childcare

50. Do you think your surgical training has had a significant cost in terms of any of the following:

	Yes	No
Mental Health	○	○
Physical Health	○	○
Relationships	○	○
Financial Security	○	○
Ability to settle down in a permanent home	○	○

Other (please specify)

51. Please answer the following questions

	Yes	No	Unsure
I have missed a major family event due to clinical work	○	○	○
I have missed many family events due to clinical work	○	○	○
I have missed a major family event due to non-clinical work that was necessary for my career progression	○	○	○
I have missed many major family events due to non-clinical work that was necessary for my career progression	○	○	○
Staffing levels in my current post impact negatively on my quality of life	○	○	○
Rota patterns in my current post impact negatively on my quality of life	○	○	○

52. Please answer the following questions

	Yes	No	Maybe
I would support a fixed "training fee", which I would pay annually throughout my training that would cover tuition, courses, exams and fees to professional bodies such as surgical royal colleges, the GMC and one specialty association	○	○	○
I would support raising the annual Surgical Royal College Subscription for all MEMBERS AND FELLOWS in order to subsume the costs of the JCST fee	○	○	○
I would be happy to fund (up to £500 or 700 euro) a boot-camp in my specialty during core training	○	○	○
The cost of surgical training in the UK and Ireland is likely to dissuade me from a career in surgery	○	○	○
The cost of training in the UK and Ireland is likely to make me leave medicine altogether	○	○	○
The cost of training in the UK and Ireland is likely to make me leave the UK or Ireland to work as a doctor elsewhere	○	○	○

53. Are there any other comments you would like to make regarding the cost of surgical training, study budgets or any other related matters? Please use the box below.

54. Who do you think should contribute to the cost of surgical training? Please rank the stakeholders below, from most contribution (1), to least (9).

- The Government
- NHS Trusts
- Universities
- Private sector providers
- Trainees
- Surgical Royal Colleges
- Industry
- Surgical specialty associations

Cost of Surgical Training Survey 2015

13. End of Survey

Thank you for taking the time to complete this survey, we are very grateful for your responses.

The results will be freely disseminated, including through publication and on trainee association websites, and provided to Political Leaders, the Royal Colleges, JCST and Specialty Associations.

For more information about the work being undertaken on your behalf, please visit our website, email us or tweet:

www.asit.org
info@asit.org
@ASiTofficial

For more information regarding professional bodies approved for tax relief:

https://www.gov.uk/government/publications/professional-bodies-approved-for-tax-relief-list-3/approved-professional-organisations-and-learned-societies#g

Appendix Three: Results for military trainees

There were 20 military trainee respondents. All 20 graduated from medical school in the UK: 19 (90%) graduated with debt on graduation (mean £18,650). 16 (80%) had a military grant at medical school, 10 (50%) had a government student loan and 4 (20%) had a bank or other loan. The mean amount paid out, that was not reimbursed, for courses was £4250, for conferences £1643, and £2130 for exams. Mean costs per year included surgical royal college subscription (£317), specialty society membership (£336), journals (£79), text books (£245). 7 had completed an MSc (35%), 5 an MD (25%) and 1 (5%) had done both since graduating from medical school (mean cost £12822).

Which specialty do you intend to pursue?	What is your stage of training?
General Surgery: 6 (30%) Trauma and Orthopaedics: 6 (30%) Vascular Surgery: 2 (10%)	Foundation Year 1: 1 (5%) Foundation Year 2: 0 (0%) ST1/CT1/SHO1: 4 (20%) ST2/CT2/SHO2: 2 (10%) ST3/SPR1: 1 (5%) ST4/SPR2: 4 (20%) ST5/SPR3: 2 (10%) ST6/SPR4: 1 (5%) ST7/SPR5: 1 (5%) ST8/SPR6: 1 (5%) Post CCT: 1 (5%) Research Post: 2 (10%)

Demographic	Military Trainees
Number	20
Male: Female (%)	14:6 (70:30%)
Mean Age (years)	33.8 (range 27-41)
LTFT Trainees (%)	0 (0)
Academic Trainees (%)	1 (5%)

Appendix Four: Tables of costs to the trainee in each surgical specialty

Using the published requirements for progression through surgical training we have provided an estimated breakdown of the costs to the trainee in each surgical specialty. The following tables of costs assume straight progression through F1-ST8 without taking time out for LTFT, post-graduate degrees or other career breaks. These prices are correct as of November 2016. July 2016 CCT guidance used as per JCST website. Conference costs do not include travel or subsistence.

BMA= British Medical Association, CCT= Certificate of Completion of Training, CST= Core Surgical Trainee, CT= Core Training (year), FP=Foundation Programme, FRCS= Fellowship of the Royal College of Surgeons, GMC= General Medical Council, HST=Higher Surgical Trainee, JCST= Joint Committee on Surgical Training, MRCS= Membership of the Royal College of Surgeons, RCS= Surgical Royal College, RCSEng= Royal College of Surgeons of England, RCPSCG= Royal College of Physicians and Surgeons of Glasgow, ST= Specialty Trainee (year).

Cardiothoracic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£710
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
RCSEng Specialty Skills in Cardiothoracic Surgery Course	£774
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
National or international conference attendance each year of training e.g. Society for Cardiothoracic Surgery conference booked as early bird rate as a member	£205 per year for 2 years as CST, £305 per year for 6 years as HST
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society for Cardiothoracic Surgery	£100 per year for 2 years as CST, £200 per year for 6 years as HST
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24039.00**

General Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (and completion fee)	£2269
Good Clinical Practice Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
Course relevant to specialist interest e.g. RCSEng specialty skills in coloproctology	£585
ATLS revalidation to keep valid at time of certification	£350
Attendance at 4 national or international conferences during training e.g. Association of Surgeons of Great Britain and Ireland conference booked as early bird rate as a member	£260 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Association of Surgeons of Great Britain and Ireland	£81 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£22488.50**

Neurosurgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650.00
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724.00
Mandatory for CCT	
FRCS examination (including completion fee)	£2269.00
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354.00
Training and Education Course e.g. RCSEng Training the Trainers	£702.00
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Attendance at 4 national or international conferences during training e.g. Society of British Neurological Surgeons conference booked as early bird rate as an affiliate member	£150 per year for 4 years
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Society of British Neurological Surgeons	£145 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21625.50**

Oral and Maxillofacial Surgery

Requirements	Cost
Essential for Surgical Training	
Bachelor of Dental Surgery e.g. University of Liverpool BDS graduate entry	£9000 for 4 years
JCST fee (for 7 years)	£255 per year for surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
GDC registration (for 9 years)	£890 per year
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Acute Life-threatening Events Recognition and Treatment (ALERT) Course	£95
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Emergency Skills Course e.g. RCSEng Emergency Skills in Oral and Maxillofacial Surgery	£877.50
Basic Plating Course e.g. AO basic OMFS plating course	£499
Head and Neck Anatomy Course e.g. RCSEng basic surgical anatomy of the head and neck	£414
Surgical Dermatology Course e.g. RCSEd Facial aesthetics course	£785
Orthognathic Course e.g. 6th biennial Glasgow course	£495
Microvascular Course e.g. University of Liverpool microvascular course	£1400
Complex/Advanced Trauma Course inc. condylar fractures and orbital access e.g. SORG course	£1500
3 advanced sub-specialty courses:	
e.g. Establishing a modern salivary gland practice	£1250
e.g. Newcastle functional septorhinoplasty and facial plastics cadaveric course	£950
e.g. Controversies in the management of head and neck cancer	£275
National or international conference attendance e.g. BAOMS Conference booked as early bird rate as a member *	£200

Other BMA Membership (for 9 years) RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7 Specialty Association Membership e.g. British Association of Oral and Maxillofacial Surgeons Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	 £113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+ £316 per year for 4 years as member, £531 for 1 year as fellow £85 per year for 7 years £1325
TOTAL ESTIMATE	**£71431.50**

* Where no minimum number of attendances documented a minimum of 1 included

Otolaryngology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
Diploma of Otolaryngology Head and Neck Surgery (DO-HNS)	£932.00
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Advanced Life Support Course	£550
Advanced Paediatric Life Support Course and 2 x ENT courses	see below
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Temporal Bone Dissection Course e.g. Cuschieri Skills Course	£225
Sinus Anatomy and Surgical Dissection Course e.g. Cuschieri Skills Course	£275
Head and Neck Surgery Course (including LASER) e.g. RCSEd Head and Neck Course Module 1 and 2	£850 and £1050
Septorhinoplasty and Facial Plastics Surgery Course e.g. NSTC Course	£350
Advanced Paediatric Life Support Course	£395
National or international conference attendance e.g. BACO Conference booked as an ENT-UK member *	£825
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. ENT-UK	£210 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£25218.50**

* Where no minimum number of attendances documented a minimum of 1 included

Paediatric Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Paediatric Life Support Course	£395
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Association of Paediatric Surgeons conference booked as early bird rate as a member *	£150
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Paediatric Surgeons	£110 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21640.50**

* Where no minimum number of attendances documented a minimum of 1 included

Plastic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
Advanced Trauma Life Support Course (ATLS) completed during training	included above
Other	
BMA Membership (for 10 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. BAPRAS	£150 per year for 7 years (first year membership free)
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£20561.50**

Trauma and Orthopaedic Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Advanced Trauma Life Support Course (ATLS)	£650
Desirable for progression to ST3	
RCSEng Basic Surgical Skills Course (BSS)	£670.50
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Basic Course on Fracture Management e.g. RCPSCG principles of casting for orthopaedic trainees	£20
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance e.g. British Orthopaedic Association conference booked as a member *	Free
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST8	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Orthopaedic Association	£152 per year for 2 years as CST, £166 per year for 2 years as ST3-4, £204 per year for 2 years as ST5-6, £240 per year for 2 years as ST7-8
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£21405.50**

* Where no minimum number of attendances documented a minimum of 1 included

Urology

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 7 years)	£255 per year of surgical training
GMC registration (for 9 years)	£200 for FP1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
Desirable for progression to ST3	£670.50
RCSEng Basic Surgical Skills Course (BSS)	£650
Advanced Trauma Life Support Course (ATLS)	£724
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
Urodynamics Course e.g. Belfast Training Academy Course	£187.50
Paediatric Urology Course e.g. BAPU Course	£295
Spinal Injuries Course e.g. Princess Royal Spinal Unit Course	£450
Emergency Urology Course e.g. East of England Emergency Urology Course	£65
Attendance at 1 national or international conference every 2 years of training e.g. British Association of Urological Surgeons Conference booked as early bird rate as a member	£100 per year for 3 years
Other	
BMA Membership (for 9 years)	£113 for FP1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 4 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. British Association of Urological Surgeons	£160 per year for 7 years
Healthcare Protection Organisation (for 9 years) e.g. Medical Defence Union	£1325
TOTAL ESTIMATE	**£20719**

Vascular Surgery

Requirements	Cost
Essential for Surgical Training	
JCST fee (for 8 years)	£255 per year of surgical training
GMC registration (for 10 years)	£200 for FY1 year, £425 per year for FP2+
Mandatory for progression to ST3	
MRCS examination	£1425
RCSEng Basic Surgical Skills Course (BSS)	£670.50
Advanced Trauma Life Support Course (ATLS)	£650
RCSEng Care of the Critically Ill Surgical Patient Course (CCrISP)	£724
Mandatory for CCT	
FRCS examination (including completion fee)	£2269
Good Clinical Practice Course	Free
Research Methodology Course	Free
NHS Management Course e.g. BMA management essentials	£354
Training and Education Course e.g. RCSEng Training the Trainers	£702
ATLS revalidation to keep valid at time of certification	£350
National or international conference attendance per year e.g. Vascular Society Conference booked as a member at early bird rate	£375 per year for 8 years
Other	
BMA Membership (for 10 years)	£113 for FY1 year, £222 per year for FP2-CT2, £329 per year for ST3-5, £443 per year ST6+
RCS subscription fees e.g. RCSEng if complete MRCS at CT2 and FRCS as ST7	£316 per year for 5 years as member, £531 for 1 year as fellow
Specialty Association Membership e.g. Vascular Society	£115 per year for 8 years
Healthcare Protection Organisation (for 10 years) e.g. Medical Defence Union	£1800
TOTAL ESTIMATE	**£24135.50**

STROBE Statement for A CROSS-SECTIONAL STUDY OF THE FINANCIAL COST OF TRAINING TO THE SURGICAL TRAINEE

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract PAGE 1 □
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found PAGE 2-3 □
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported PAGE 5-6 □
Objectives	3	State specific objectives, including any prespecified hypotheses PAGE 6 □
Methods		
Study design	4	Present key elements of study design early in the paper PAGE 7-10 □
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection PAGE 7-10 □
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants PAGE 7-10 □
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable

		PAGE 7-10 □
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias PAGE 4, 7-10 □
Study size	10	Explain how the study size was arrived at PAGE 10 □
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why PAGE 7-10 □
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding PAGE 10 □
		(*b*) Describe any methods used to examine subgroups and interactions PAGE 10 □
		(*c*) Explain how missing data were addressed PAGE 9 □
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy PAGE 7-10 □
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed PAGE 10-12 □
		(b) Give reasons for non-participation at each stage PAGE 10-12 □
		(c) Consider use of a flow diagram N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders PAGE 10-12 □
		(b) Indicate number of participants with missing data for each variable of interest PAGE 10-13 □
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures PAGE 10-13 □
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included PAGE 10-13 □
		(*b*) Report category boundaries when continuous variables were categorized PAGE 10-13 □
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	18	Summarise key results with reference to study objectives PAGE 14-18 □
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias PAGE 4 □
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence

		PAGE 14-18
Generalisability	21	Discuss the generalisability (external validity) of the study results PAGE 14-18
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based PAGE 19

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.