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Improving Surgical Training

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Abstract

Improving Surgical Training is a programme piloting an innovative, evidence-based approach to training. It was developed in response to the Shape of Training report which reviewed postgraduate training and recommended changes in medical education to meet the demands of the modern NHS. A series of initiatives have been developed to enhance the experience for surgical trainees not only to encourage a more focussed and supported method, but also to improve their job satisfaction. The initiatives have combined a greater emphasis on time for training provided by trainers with allocated time for training with multidisciplinary teamworking and the use of technology enhanced learning with simulation of both technical and non-technical skills. The pilot started in 2018 with core training in general surgery and has been expanded to include vascular surgery, urology and trauma and orthopaedics over the last 2 years. Initial feedback from both trainees, trainers and schools of surgery have identified different challenges to aid implementation. The programme is being very carefully evaluated by an independent company as well as careful oversight by the General Medical Council which are paramount to its success.

Keywords Dedicated training time; extended surgical team; simulation; surgical training

Introduction

The Improving Surgical Training (IST) pilot programme is a joint project between the Royal College of Surgeons of England (RCSEng) and Health Education England (HEE). It was developed to institute a series of initiatives to improve the experience of trainees within the context of modern training approaches and has been rolled out across England, Scotland and Wales over the last 2 years. In this article the background to the IST project will be described together with the principal approaches which have been developed within the pilot programme. There has already been some early feedback on the pilot programme which will be described. The implications for surgical training for the future will also be discussed.

Background

In 2013 the Shape of Training\(^1\) report was published which made a number of recommendations for changes to postgraduate medical education. These included developing training such that doctors acquired more general skills to respond to NHS needs. It was recognized that there was still a requirement for specialists, but training in general needed to be more flexible and respond to patient needs. It also recommended shortening training with the option of credentialing for certain specific conditions and treatments within specialties. It was proposed that the recommendations of the Shape of Training report would be implemented in an incremental fashion to minimize service disruption. There would need to be preservation of the existing approach to training to fit within the current structures. It was also recommended that training pathways should be modified to revise the current approach to the acquisition of the capabilities for the award of the Certificate of Completion of Training (CCT).

HEE approached the RCS to determine whether the implications of Shape of Training could be introduced to improve surgical training in general. The RCSEng produced a report\(^2\) which assessed practical ways of improving training with description of different models. The report looked at the feasibility of a pilot study and also made an assessment of the financial implications. The IST project team undertook wide stakeholder discussion and incorporated the feedback in order to make recommendations for further work.

The working group comprised members of RCSEng training leads as well as representatives of HEE. The group considered the relevance of Shape of Training to surgical training both at a core level and at a higher level. This required a careful review of the problems associated with surgical training at the time in 2014. HEE suggested that the working group should be radical and should not be constrained by traditional boundaries. It should consider the patient and the service perspective as well as looking at the wider team involved with providing surgical care. It was also stressed that this had to be done within the concurrent financial constraints which were obviously paramount to providing a new approach within existing structures.

It was apparent from discussions with stakeholders that the problems with training included the imbalance between service provision and training, the lack of time for training and the lack of flexibility during the training process. These issues were particularly a problem in the early years of surgical training. In the GMC training survey of 2014 levels of satisfaction with training were particularly low in both core surgical training and doctors in foundation training during their surgical posts. In core surgical training the levels of satisfaction were 77% and in Foundation 72% compared with 85% for those in specialist surgical training. These figures contrasted with over 80% satisfaction in many other specialties (Box 1).

Anecdotal evidence from conversations with core trainees showed very limited time for training due to rota configurations. In addition, access to simple surgical procedures was significantly reduced again because of lack of the ability to get to the operating theatre. It was apparent that where there were small groups of trainees within a rota, the opportunity for daytime elective experience was significantly lower in comparison to those where there were more trainees working on a core rota.

In the context of these findings the working group recommended a series of initiatives to improve training opportunities in initially core surgical training with the intention that these were rolled out into higher training as trainees progressed on their training trajectory. The working group wanted to take the opportunity to improve the overall quality of teaching and training.
as well as evaluating the time for training and supervision. This was in the context of existing rotas for emergency service provision which had a significant effect on time for elective work. In addition, the working party wanted to look at the role of the allied healthcare professional workforce, which had been described in a report by the RCSEng looking at the extended surgical team (EST).³

In summary, the report recommended a reduced service commitment with appropriate time during the working week dedicated to training, an approach to professionalize trainers and educational supervisors and refinement of the process of training.

**Reduced service commitment**

There had previously been some work completed by the Royal College of Physicians (Figure 1) which clearly demonstrated that the larger the number of individuals within a rota resulted in more time available in the working week for training. This work demonstrated that when there were at least ten members of the workforce on a rota then approximately 60% of the working week could be dedicated to training. In order to achieve such large numbers within a rota it was apparent that rotas across trainee levels would need to be merged. Following on from the RCSEng document on the EST, it was clear that members of the non-medical workforce would be very valuable in supporting junior surgeons to enable them to attend dedicated training sessions as opposed to providing service activity. This included consideration of the non-medical workforce taking part in the on-call rota.

**Professionalizing trainers**

Education of trainers has been a routine component of professional development supported for example by Training the Trainers courses. It was clear that the apprenticeship model for surgical trainees needed modification with the relationship between trainer and trainee being, not only the practical approach to gaining surgical skills, but also acting as a mentor. It was felt that long-term attachments to a training host site would be advantageous to enhance teamwork in the context of the modern surgical firm. As a result, it was essential that there was adequate time provided in trainers’ job plans in order that they could develop their approaches and support for the trainees. In particular, this would require regular dedicated time during the working week for one-to-one discussions between trainer and trainee.

**Refined process**

Traditionally, training has been time based and this has often reflected volume of experience with a required number of index

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**Box 1**

| GMC Survey 2014 — Trainee Satisfaction |
|----------------------------------------|
| • General practice: 88.6%              |
| • Anaesthesia: 85.6%                   |
| • Ophthalmology: 84.1%                |
| • Radiology: 83.8%                    |
| • Psychiatry: 83.4%                   |
| • Emergency medicine: 81.6%           |
| • Medicine: 78.4%                     |
| • Surgery: 77.1%                      |
|   • Specialty: 85.5%                  |
|   • Core: 77.2%                       |
|   • Foundation: 72.1%                 |

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**Rota cell and training opportunities**

![Figure 1](image-url)
Taking their extensive review of ARCP, it was initially thought how the Annual Review of Competency Progression (ARCP) progression into higher surgical training. The group discussed appropriate assessment at the end of the first 2 years prior to was seen to be popular with trainees in the context of their work-standards for training and it was apparent that run through training enables skills to be learnt and practiced in a setting away from the clinical environment and can be expanded to include both technical and non-technical skills. This has particular application with regular intensive induction programmes at key components of the training trajectory.

Surgical training has traditionally been time based with progress based on competitive selection at key stages. Other specialties have included run through training based on the achievement of defined criteria before moving to the next level. Moving to a competence-based approach is part of the GMC new standards for training and it was apparent that run through training should be considered within IST not the least because it was seen to be popular with trainees in the context of their work-life balance. The development of run through training requires appropriate assessment at the end of the first 2 years prior to progression into higher surgical training. The group discussed how the Annual Review of Competency Progression (ARCP) process could be modified and this coincided with HEE undertaking their extensive review of ARCP. It was initially thought that there should be some type of benchmarking process to ensure those completing the IST pilot core training were of a similar skill mix and competence as their peers who had completed core training in the traditional way.

Refined product
In the context of the Shape of Training report, it was recognized that the surgical trainee should be competent in the generality of surgery such that they could cope with specific issues, including perioperative care of the surgical patient. As a result, training in the early years should be broad based and, in particular in general surgery, this should include the breadth of general surgery together with acute urology, acute vascular surgery and acute general surgery of childhood. In order to develop a progression from foundation into core training, the working group recommended that there should be opportunities for themed foundation training in the second year. In addition, as the programme was not simply designed for core training, there should be support for the development of specialization in the latter years of training and this will involve the development of specific fellowship programmes to be completed at or just after the award of a CCT.

In spite of these refinements it was fundamental that the product of training within IST would be the same as in traditional programmes culminating in the award of a CCT.

The completed report was published in 2016 and discussed carefully with HEE in terms of implementation. The final agreed principal initiatives are shown in Box 2.

### Principal initiatives of Improving Surgical Training

- Provide trainees with a better balance between training and service delivery
- Improve the quality of training posts by enhancing the role of trainers to enable them to dedicate more time to deliver training
- Encourage posts for trainees to work in one institution for at least 12 months to enhance relationship with educational supervisor
- Adapt different rota designs to allow surgeons to train more during daytime hours
- Develop surgical skills earlier through focused training opportunities, including simulation
- Promote a workforce from other professions (the wider surgical team) to support trainees to help deliver better patient care and free up their time for more training
- Encourage competence-based progression with run through training

### Implementation

General surgery was selected as the first specialty in the IST pilot. This was partly in the context of the generality of surgical training and that many existing core programmes were themed for trainees wishing to pursue general surgery as a specialty interest. It was decided for the first cohort to include eight of the Schools of Surgery in England as well as core training in Scotland and Wales. The Heads of School were asked to identify posts within their programmes that they thought would be appropriate to enter the pilot. Schools were invited to submit applications for review by the working group against a set of criteria, which were based upon the principal initiatives (Box 3).

Schools which were selected were able to meet the majority of their criteria, but there were some issues with the provision of access to appropriate time for trainers as well as the availability of the non-medical workforce within the EST. Discussions with representatives of NHS employers who expressed interest in the pilot recognized that there would be timetabling issues for EST trainers and that in some likely host sites there were only limited numbers of members of the EST available to support the trainees.

The first cohort of trainees entered into IST in 2018 with 23 in England, 8 in Wales and 49 in Scotland. In Scotland all core posts were included with the 49 posts divided into 18 run through and 31 core posts which were IST compliant. Entry in 2019 was extended to include urology and vascular surgery. In England there were 29 general surgery posts, 10 urology and 7 vascular.
with 46 in Scotland comprising 41 in general surgery 4 urology and 1 in vascular, and in Wales 9 in general surgery. It is intended to expand the specialties involved in the pilot in 2020 with the inclusion of trauma and orthopaedics.

Trainees have been selected into the pilots following application within the national core selection process and they were given the option to select being considered for IST. It was felt that, by including them in standard core selection, any potential bias in the selection into the pilot programme would be minimized, as they would be appointed on merit in open competition with their peers who wished to enter a non-IST programme.

**Initial experience**

During the first 2 years, the IST project board has carefully sought the initial experience of both trainees and trainers using a series of surveys as well as visits to schools and regular updates from the heads of schools. The board wanted to ensure that, as IST was rolled out, none of the trainees were disadvantaged by the new programme. Although the first cohort of trainees entering IST were aware that they were training according to the core surgical curriculum, the initiatives with IST were unproven. Trainees were therefore asked for their feedback on their reasons for applying to IST. This survey was undertaken after the initial cohort had been appointed. There were 32 responses with 19 trainees stating they applied because of the run through component and 15 because they wish to train throughout their training in the same geographical region. In addition, trainees found the prospect of simulation attractive and appreciated that the pilot was looking at improving training with more focused opportunities.

Feedback on the principal initiatives of IST provided some detail of the challenges of the implementation. In the original proposal, it was suggested that rotas should be at least 1 in 10 and preferably 1 in 12 or 1 in 14. These proved very difficult for pilot sites because of the size of the core surgical workforce. It was decided therefore that, as opposed to planning the working week according to the size of the rota, the aim should be for 60% of the working week being dedicated to training. Although this presented a structure for trainers, the actual content of the training time required further development. For example, the role of training lists and training clinics needed to be defined. In addition, there needed to be careful determination of the equitable access to both emergency and elective work without an emphasis on either one. This included review of rotas and the way in which these were staffed. As a result, pilot sites developed novel rotas which not only were planned for the whole of a 52 week timetable, but were also designed with appropriate access to elective general surgery and also the workforce included on the rota. In one example the on-call rota included 13 members of staff which not only included IST trainees, but also core trainees in general surgery and urology as well as foundation trainees and advanced nurse practitioners. This proved very successful ensuring all trainees had access to the spectrum of elective and emergency work as well as acute urology, vascular surgery and general surgery of childhood.

The inclusion of simulation within IST was intended to enable embedding of simulation of both technical and non-technical skills. Schools of surgery have for some time established simulation induction programmes at the beginning of core surgery training. In addition, a number of specialties have also included simulation programmes in higher specialty training. Initially, there was some consideration of the inclusion of simulation in the workplace. However, feedback has indicated that this is not universally available and is not easy to build in to a weekly timetable. There are a number of well-developed simulation programmes. In Scotland, for example, there is a 4-day educational induction programme which is supplemented by further regionally based basic surgical skills, laparoscopic skills and non-technical skills training. In IST, it is planned to ensure these opportunities are regularly available to all trainees. This, however, is challenging, particularly because of variable availability of resources. In addition, in the context of the new standards for curricula published by the GMC, simulation will be seen as a method of learning as opposed to an absolute session in the working week.

The importance of well-trained trainers to provide training within IST is seen as particularly important. The IST project board has provided specific training for trainers with sessions dedicated to explaining the background to the pilot programme and how this should be integrated within the training timetable. One of the difficulties has been ensuring there is appropriate time for trainers to support the trainees. It is envisaged that there should be at least one session per week in which the trainer meets with the trainee to discuss progress, consider reflecting on the activities in the preceding week and plan the activities for the following week. This would provide a great opportunity to undertake case-based discussion, which could be part of the evaluation within the workplace-based assessment of the trainee. The difficulty is ensuring adequate time in the trainer’s job plan. There is variation across the country with regards to the time allowed by employers within consultant job plans. This has the potential to limit the relationship between trainer and trainee. In order to allow this to develop further, one of the proposals has been the appointment of an IST champion within each school who can support both education and clinical supervisors at Trust level.

As was apparent from the trainee survey of why they selected to join the IST pilot, run through training is considered to be a preferred option for many. Not only does this ensure remaining in the same training environment for a set and, as appropriate, prolonged period of time, it also would minimize the need to go through a formal selection process to progress from core into higher surgical training. This whole systems approach does require checks and balances to make sure the trainee is progressing appropriately and reaching the targets set in their learning agreement. This requires a regular formative assessment of progress which informs the educational supervisor’s report to the ARCP panel. One option would be for the trainee to have an interim ARCP midway through the year which would ensure they were on the correct trajectory and there were no issues which needed addressing specifically. The ARCP at the end of core training would need to be robust to ensure qualitatively that the trainee has reached the same level as their peers who were going through traditional core training. For this group, in uncoupled training, satisfactory performance in the national selection process is considered to represent an important and necessary assessment for progression. There has been considerable...
discussion about the progression from the end of core to higher specialty training within the run through programme. It has been decided that IST pilot trainees should take part in the national selection process, but the outcome of that process should not influence their progression. As long as they have completed the MRCS examination and have achieved all the competences required in the core surgery curriculum with approval by the ARCP panel, they can progress to higher training. (In view of the current crisis due to COVID-19 this process has been cancelled in 2020).

As has already been described, the constitution of on-call rota in a number of pilot sites has included non-medical workforce usually in the form of the advanced nurse practitioners. The inclusion of the EST within IST was not only part of the RCSEng plans for the modern surgical firm, but also is part of the NHS England People Plan for the medical workforce. There have been examples in the past of surgical care practitioners (SCPs) working in parallel with core surgical trainees, and these SCPs have been trained using curricula that mirror the core surgical training curriculum. The extension of this workforce is seen to have a number of benefits not the least being continuity of care, which is essential for patient safety, but also to provide support for core trainees to access training opportunities. The development of the EST, however, is challenging as these practitioners do need to be trained with such training taking place in the workplace as well as undertaking coursework. The trainers for this group of practitioners are not only their peers, but also surgeons and this of course brings some challenges with available surgeon time. There is also a challenge from the perspective of employers as this is effectively a new workforce which will require appropriate conditions of service and salary. HEE is developing a programme of training the EST workforce in parallel with the developments for IST and this will be rolling out in the next year or two.

In addition to the principal initiatives of IST pilot, trusts have developed a number of local initiatives to enhance the trainees experience. These have included skills clubs whereby groups of trainees can informally meet to discuss their experiences and to share lessons that they have learned during training. The role of mentors has been advocated, including more senior trainees who are able to support and advise their younger colleagues. In order to ensure trainees are able to attend regular teaching both locally and regionally, the development of rota coordinators within postgraduate medical centres has proven very effective in coordinating the individual trainee programmes. Anecdotally, the presence of IST trainees has had an effect on the quality of experience of those in uncoupled non-IST posts. As a result, many schools are looking at introducing the principles of IST to their existing core surgical posts in other specialties with these posts remaining un-coupled with the trainee having to go through selection into specialty at the end of core.

**Future plans**

The implementation of IST has been challenging. There is no doubt that the initiatives which the original report recommended are considered to be entirely appropriate to enhance the trainees experience of training. However, achieving time for trainees in their job plans, the development of the EST and expanding simulation within the current environment has proven difficult. Currently, these three specific initiatives are being carefully evaluated in order to identify ways in which they may be made easier to implement.

Any improvement programme cannot be considered successful until it has been formally evaluated. In the approval of the initial development of IST, the GMC required regular feedback to ensure trainees were not being disadvantaged with the co-existing risk to patient safety; this feedback is being provided by the Joint Committee on Surgical Training. In addition, HEE has commissioned an independent evaluation of IST which is looking at a variety of performance indicators, not the least being trainee satisfaction, but also ensuring the qualitative outcome of IST is at least equivalent to established core training. The first cohort from the 2018 entry are moving on to higher surgical training this year. The project board originally stated that the initiatives of IST should continue into specialty training and this is again a challenge as there are different issues in specialty training to address. Modelling has been undertaken not only to ensure that there are an appropriate number of ST3 posts for both IST and non-IST trainees, but also to determine how the IST concepts can be adapted to higher training.

The IST pilot has been developed to provide better and more responsive training and is an important contribution to ensure trainees consider surgery as an attractive career option. There has been a lot of exciting progress since IST was launched, but it is equally important for maintain momentum with careful monitoring, quality assurance as well as supporting stakeholder enthusiasm to see if IST really does improve surgical training.◆

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