Increased working hours, simulation technology or competency based progression? What is the solution for surgical training?

Zain Sheikh

Abstract

Surgical training has changed in recent years. Surgical-skill training is considered suboptimal as early as medical school. Changes to medical team structure and societal demographics have also negatively impacted training. To counteract this, the following options are explored: (i) working hours; (ii) competency-based assessment (CBT); and (iii) surgical simulation. With the current requirement of service provision in the health service and political pressures, increasing working hours is not feasible. All stages of training are saturated with CBT. Increasing its use may be unwise, however adjusting it to further emphasize surgical skill may be beneficial. Whilst simulation is not a new concept in surgery, technological advancements have resulted in increased accessibility of computer based simulators. These have been shown to improve surgical skill so should be considered. Surgical training requires reform and trainees need to be involved from the outset. CBT should increase surgical emphasis and simulation should be assessed for integration into training.

Keywords Competency based assessment; medical education; simulation; surgery; surgical education; training; working hours

The **ASiT, *Surgery* Journal and PLG Foundation Doctors Essay Prize** is a national essay competition run by the Association of Surgeons in Training in conjunction with *Surgery* journal. The Essay Prize is aimed at Foundation Doctors in the UK and Ireland pursuing a career in surgery. For 2016, essays were invited on the topic ***'Increased working hours, simulation technology or competency based progression? What is the solution for surgical training?'***. All submitted essays were shortlisted by members of the ASiT Council and the Patient Liaison Group of the Royal College of Surgeons of England selected the three winners from this shortlist.

The winners were announced at the ASiT Annual Conference in Bournemouth in March 2017.

First place went to Zain Sheikh, whose prize was £250 of Elsevier book vouchers and a subscription to *Surgery* journal. We are delighted to publish the winning essay below.

Second place was awarded to Rahul Pankhania, who won £150 of Elsevier book vouchers. Third place was awarded to Poppy Redman, who won copies of Kirk's *General Surgical Operations* book and Quick's *Essential Surgery* book.

Background

Surgical training is a lengthy process. In the UK, to become a consultant surgeon, it takes a minimum of 15 years (Figure 1). Changes to the culture of the NHS, the development of new technology, political health targets and changes in the role of the doctor in society[1] have culminated in an impact on surgical training.

Issues with training arise during medical school. There is little exposure to formal surgical training; basic techniques including knot tying, instrument handling and suturing have been neglected by undergraduate curriculums with skill-specific training rates at less than 25%.[2] Whilst surgical placements may allow the acquisition of these skills, this varies immensely depending on the team and resources. This has contributed towards low rates of satisfaction with surgical science teaching amongst UK medical students.[3]

There have been several upheavals to training brought on by various external policies. One major contributor was the European working time directive (EWTD), enforcing a 48-hour work week limit and with it Modernising Medical Careers (MMC) which changed the structure of surgical training (Figure 2).[4]

Whilst potentially beneficial for some non-surgical specialties, it was argued to negatively impact surgical training. This is because surgery as a 'craft specialty' emphasizes procedural skill which takes longer to learn and practice.[5] Prior to MMC, doctors operated on a team-based system in which junior doctors (house officers, senior house officers, registrars) were allocated to a consultant. These consultant-based teams or 'firms' had dedicated doctors looking after their team's specific patients. This resulted in several doctors simultaneously on call with an in-depth knowledge and awareness of their patients and more time for training activities.

There has been a dramatic change from a firm to a shift structure with a single doctor of each 'grade' responsible for multiple wards of patients they are unfamiliar with, resulting in a greater workload. Currently, 44% of trainees report their workload as heavy/very heavy and 25% state it regularly leaves them short of sleep.[6] Moreover, it was reported that a disproportionate amount of time was spent on service provision in place of training.[4] With rising healthcare costs due to an aging population and rising comorbidity rates, despite the EWTD and MMC's intentions, training remains sub-optimal. To compound effects, a significant number of surgical Foundation Programme training posts have moved to community-based posts resulting in even less surgical exposure.

With the reduction of intake of medical students, increasing dissatisfaction with training,[6] reduced surgical training application/fill rates changes need to be made to ensure surgical training in the UK maintains a high standard and is desirable.

Surgical training time is a contested subject. There is little definitive evidence on what constitutes the appropriate amount

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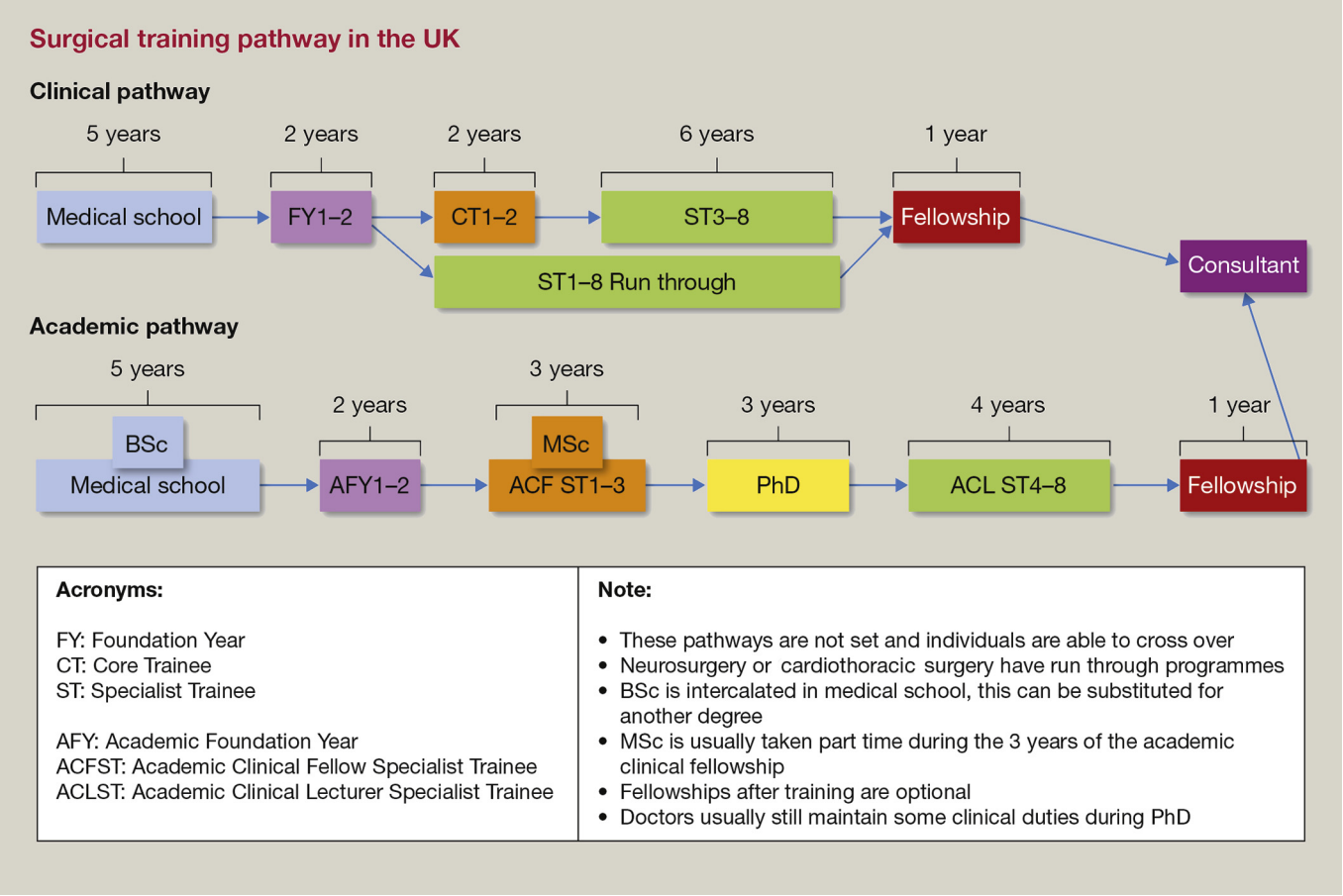

Figure 1 Change in medical training structures before and after modernising medical careers.

of time. This is exemplified by the large difference in surgical training time not only between surgical specialties (e.g. breast surgery which requires a 1-year fellowship versus neurosurgery which requires 8-years run-through) but also training time between the same specialty (In the US a 5-year residency post-graduation).

It is stated that 10,000 hours of practice is required to achieve expert status; however, surgery consists of more than just manual proficiency. The cognitive dimension and communication skills are arguably equally as important. It is the question of, 'When do we operate and what shall we tell the family?' For this reason, it has been proposed that 15,000–20,000 hours are required for surgical training to account for both manual skill and knowledge/judgement.[7]

Increasing working hours

The simplest way to achieve these monumental hours is by increasing working hours. In the context of the modern NHS, this poses challenges. Service provision often takes priority over training due to patient safety concerns[4] and some say that restrictions on working time has resulted in poorer quality training.[8] The impact of the EWTD is disputed, with some finding that hours restriction did not reduce fatigue or perhaps even working time amongst doctors and others stating that it increased difficulty in attending training sessions.

Additionally, there are increasing pressures on the NHS including rota gaps which have resulted in juniors having to cover other responsibilities. Work-life imbalance has reached an extent where it impacts on both the trainee's training and wellbeing.[9]

Considering the above, increasing working hours may be unwise. One possible option would be to integrate a national formal surgical curriculum as an undergraduate. Individuals interested in surgery would be identified early, enrolled onto a national surgical training programme and given a nominated surgical supervisor/mentor with a dedicated timetable instead of the ad-hoc surgical placements that are currently in place.

Another contentious issue is the role of physician associates or advanced care/advanced nurse/surgical care practitioners. Whilst in theory they may be useful to ease the pressures on surgical trainees by managing ward patients whilst trainees remain in theatre, there is inevitably a potential of removing training opportunities from doctors. The role of the extended team could be useful and enable surgical trainees more quality training time if roles are properly defined and regulated.

Competency-based training

Competency-based training (CBT) is theorized to have originated from vocational training in non-medical disciplines initiated by political motivations.[10] It is the breakdown of a role into discrete

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