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Teaching Surgical Residents in the COVID-19 Era: The Value of a Simulation Strategy

Dear Editor,—We commend the initiative and efforts described by Okland et al in minimising the disruption to surgical training caused by COVID-19.¹ Their simulation programme involves take-home ‘surgical kit’ and 3D-printed hydrogel models. This is similar to 2 components of our own ‘Improving Surgical Training (IST) Simulation Strategy’ that is currently undergoing a 3-year pilot in each of Scotland’s 2 ‘Core Surgical Training Programmes’ (equivalent to residency years 1 and 2).

Following the findings from an independent review on postgraduate medical education and training in the United Kingdom,² the Royal College of Surgeons of England undertook a review of surgical training for junior residents (known as “Core Surgical Trainees” in the United Kingdom) and set out proposals for an IST pilot.³ Features include: (1) improving daytime access to elective training opportunities, (2) professionalisation of trainers to improve trainee-trainer relationships, and (3) the integrated use of simulation as an adjunct to the modern clinical apprenticeship.⁴

Since 2018, the Scottish part of the UK-wide pilot has welcomed three cohorts of 48, 46 and 54 trainees into its 2-year programme. A key feature is the ‘Simulation Strategy’⁵ – a government-funded, simulation-based education programme that is interwoven into the 2-year surgical training programme aligned with the Core Surgical Curriculum,⁶ and aims to accelerate key skills acquisition. It includes (1) courses (a 4-day induction boot camp encompassing technical and non-technical skills,^{7,8} a critical care course, a cadaveric open operating course and a minimally invasive surgery course); (2) monthly training days which include technical (e.g., stoma training) and non-technical (e.g., shared decision-making) sessions; and (3) take-home Deliberate Practice (DP) programmes.

In the first year, the DP programme focusses on laparoscopic surgery using take-home laparoscopic simulators (EOSurgical, Edinburgh, United Kingdom)⁹ linked to a programme of 6 ‘core’ tasks with online instruction and instrument-tracking software with target metrics to achieve. Trainees regularly submit videos to faculty who score them and give feedback. Feedback is also available in ‘skills clubs’ in some of the Scottish hospitals. In our experience, it is not sufficient to issue the kit and create the opportunity. This approach alone has failed to

achieve engagement in several centres.¹⁰ Hence, we have created a whole ‘incentivised programme’ which we shall report later this year.

New to the second year of the programme, and aided by the COVID-19 pandemic, is another take-home DP programme for vascular surgery. Like Okland et al’s proposal, 3D-printed hydrogel models were designed (OrganLike, Glasgow, United Kingdom) and kits are posted to trainees. But this time, we are developing a programme of ‘virtual skills clubs’ so that the tasks can be practised in groups online. A recent pilot involving a national cohort of vascular surgery specialty trainees received positive feedback (results in press). The online tutorial videos can be seen at www.vasimulation.co.uk.

The Scottish IST ‘Simulation Strategy’ has been established on the educational principles of deliberate practice,¹¹ the mastery of technical and non-technical skills acquisition, and teaching and training within communities of practice.¹² Constant evaluation of the numerous facets that form the surgical strategy has led to iterative refinement of the overall strategy.^{7,10} The COVID-19 pandemic initially halted all non-emergency surgical training in Scotland. As surgical services resume variably, the benefits of having a simulation strategy are becoming apparent from formal and informal feedback received from trainees – the ability to practise on the simulator offering a welcome break from absence in the operating theatre.

Upon reflection, the Simulation Strategy has provided robust scaffolding that has allowed trainees to continue deliberate practice during the pandemic. Socially distanced skills club continue to allow individual community of practices to work together at a difficult time. We shall report results of the latest version of our Incentivised Laparoscopy Practice scheme this year, and there is an extensive mixed-methods evaluation of the wider Scottish pilot under way. In the meantime, we encourage programmes to devise longitudinal, integrated simulation strategies for surgical training programmes.

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