

Take on the tech

Coronavirus has accelerated the use of technology in surgical education, so where do we go from here?

Gill Hardman, Fiona Kerray, Anna Paisley, Steve Yule, Nadeem Khawaja and Jeremy Ward on behalf of the Patient Safety Group

Along with new ways of working, the COVID-19 pandemic has highlighted the need for new approaches in surgical education. There has been an exponential increase in the availability of online learning materials. Initially fulfilling the need to know more about a novel disease, these materials have expanded to fill training gaps caused by travel restrictions, social distancing and shielding.

Health Education England North West School of Surgery had planned to deliver a series of non-technical skills for surgeons (NOTSS) courses in May 2020, the first phase of work to develop patient safety, human factors and non-technical skills (NTS) education within the region. However, from March 2020 it became clear that this plan would be postponed. As the year progressed, a 'return to normal' looked increasingly unlikely.

Simultaneously, the challenges of providing safe and sustainable surgery in unprecedented circumstances brought to the fore issues of patient safety, workforce wellbeing and optimising performance. Redeployment to unfamiliar working environments, cross-skilling and a decrease in surgical exposure increased the need for access to education and training activities, but exams were cancelled, study leave suspended and some were required to shield. With that, the decision was made

to develop the existing NOTSS masterclass for delivery online.

WHAT WE DID

The College has delivered more than 20 NOTSS courses online during the pandemic, including modular courses for orthopaedic trainees, and Faculty development courses for partners in the Netherlands and Sri Lanka. In the Northwest, we have run five NOTSS masterclasses for around 100 consultant surgeons and trainees, using Zoom, with five further courses planned for 2021. The online format has allowed for greater Faculty 'sharing' and collaboration across regions, with courses provided across the UK.

Around 90% of attendees have stated that online delivery is acceptable or preferable, citing reduced costs and travel and, more importantly, a sense of increased freedom to comment and interact,

pertinent in delivery of NTS and patient safety education when rooting learning within an individual's experiences.

WHAT WE LEARNED

Transferring to online education delivery requires some thought: Here's what we now know:

Faculty: Having a presenter plus a facilitator helps. Like a good surgical assistant, they need to be highly familiar with the material and keep a couple of steps ahead, ready to spot any audio-visual issues and coordinate the interaction of the learners.

More is more when it comes to Faculty, but limit the number of people delivering content and sharing screens. These changeovers can appear clunky and take longer than expected, so preparation and clearly defined roles for Faculty members is key.

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The benefits of interaction:

Some material is well suited to individual self-directed learning, whereas other topics benefit from discussion and interaction within small groups. Most online platforms have breakout rooms, Q&A and chat functions that can be used to facilitate this interaction. Feedback from our courses suggests that many learners prefer this typed question format, feeling more empowered to speak up.

Mandating that Faculty and learners keep their cameras on throughout the session enhances the ability to pick up on non-verbal cues and for the educator to receive some audience feedback.

Time: Sharing of screens, asking questions and encouraging interaction all come with a delay, meaning sessions take longer than expected. Teaching online is mentally taxing.

Reducing the length of sessions, mixing speakers and teaching methods, along with the provision of more frequent short breaks as well as longer lunch and refreshment breaks, helps maintain

concentration during what can otherwise be a long day at a screen.

General teaching skills: Despite this novel format, all the same education rules apply – know your audience and make sure the material and delivery is appropriate. Try to maintain an awareness of who is speaking most often, encourage participation from everyone and think about facilitation versus didactic delivery.

The coffee-break conversation and networking elements of in-person course attendance are lost, along with the period of 'downtime' associated with travel or overnight accommodation. The benefit of this, in reducing costs (Deanery study leave budgets are more and more stretched) and increasing the environmental sustainability of the session, should be recognised.

Attempting to build in informal interaction with Faculty and attendees is beneficial, and online interactive courses still provide an opportunity to fulfil some of the social benefits of group training. Remembering to 'check in' with each other during these sessions remains important.

Technology-enhanced learning and digital education in surgery:

Technology-enhanced learning has cemented its role in surgical education. From simple PowerPoint presentations to online modules, digital resources are now what most trainees recognise as the foundation of their learning.

The COVID-19 pandemic has compelled many prior sceptics to engage with technology and, with the surgical community awakened, now is the time to introduce novel methods, including simulation, community learning, and alternative styles of teaching and feedback.

Augmented and virtual-reality technology is becoming more affordable and available, providing an opportunity for expansion into

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surgical education. These can be used to deliver practical and theory-based teaching.

In the same way that eoSim laparoscopic simulation devices are issued to some Scottish trainees, VR headsets could be provided for augmented surgical education in technical and non-technical skills. Content can be accessed at the learner's convenience, with progress tracked remotely. Personalised VR headsets, with a digital network for trainees to link into, offering peer feedback opportunities and an informal forum for discussion and debriefing, could be established.

The power of digital tools to enhance surgical training has been acknowledged by the creation of a research Fellowship in Human Factors and Digital Education in Vascular Surgery, jointly funded by the Vascular Society, the Circulation Foundation and the Royal College of Surgeons of Edinburgh. Commencing in August 2021, the inaugural Fellow will explore trainees' and trainers' needs, evaluate what is presently being offered and employ novel digital methods to strengthen the delivery of human factors education in surgery.

MOVING FORWARD - A RETURN TO 'NORMAL'?

It is all too easy to assume that online is a poor relative of face-to-face sessions. Perhaps the better question moving forward should be whether we need to deliver training face to face and could we adopt a novel technology-enhanced learning approach?

The pandemic has reduced the number of clinical and operative training opportunities in surgery and the demand for remotely available, effective learning tools has never been greater. With the application of robust educational practice, online, virtual and digital teaching methods can greatly enhance learning opportunities in surgical training.