

Ophthalmology Education in the Post-Coronavirus Disease 2019 Era

INTRODUCTION

Coronavirus disease 2019 (COVID-19) has significantly disrupted ophthalmic services, worldwide. Elective surgery has been suspended, and outpatient visits dramatically decreased to reduce transmission of COVID-19, enhance health system capacity, and preserve equipment. Moreover, local educational meetings including case presentations, grand rounds, and journal clubs are more or less cancelled altogether. Most medical students are instructed by their universities to not attend their clinical workplace attachments.

These sequelae will have unprecedented consequences on the education and training of medical students, residents, and fellows for the foreseeable future. Thus, it is paramount that solutions should be discussed to overcome challenges in ophthalmology training.

SURGICAL TRAINING

Ophthalmic surgical training in the UK incorporates a progressive competency-based system, encapsulating a variety of ophthalmic procedures [Table 1].¹ Trainees, who would typically be operating in their subspecialties and refining stage-specific surgical skills, have now had at least a 3-month hiatus in surgery. This gap of activity risks loss of confidence, reduction in already acquired technical skills, and increased risk of complications in the future.

There are several ways to mitigate the adverse effects of the current circumstances:

Video databases

A plethora of ophthalmic surgical videos online is a valuable source of education. They are available on various websites including academically affiliated societies such as the European Society of Cataract and Refractive Surgeons, the European Society of Retinal Surgeons, and the American Academy of Ophthalmology. There are also home-grown UK educational resources narrating oculoplastic and orbital surgical procedures

such as www.oculoplastics.info and www.eyesurgeryvideos.org. Efforts should be made to validate these videos and categorize them in a dedicated educational surgical catalog. Trainees should then be able to access these certified surgical videos accompanied by surgical notes.

In addition to the online resources, live video journal clubs and retrospective reviews of earlier recorded procedures are useful for fine-tuning individual steps of any operation through a critical review. This allows for the opportunity to explain alternative styles of specific parts of any procedure and encourages discussion on the improvement of technique.

Simulation

Simulation is essential in the modern era, which has seen marginalization of the traditional Halstedian model of “see one, do one, teach one”.² The exponential advances in virtual reality systems have led to the development of high-fidelity simulators, which provide transferable skills in an artificial environment and allow rehearsal before operating on patients.³ Most ophthalmology schools have access to EyeSi simulators which provide trainees with an opportunity to hone microsurgical skills in cataract surgery. There are also add-on modules available to train in vitreoretinal surgery. The lull in surgical workload now and during the early recovery period from COVID-19 gives mentors and trainees time and mind space to explore these aids. Current circumstances may motivate ophthalmology centers to invest if they are not already so equipped. Additionally, mentors can develop better protocols for scoring and giving feedback when they supervise residents and fellows for different procedures. Mentors should emphasize the importance of learning from each surgical performance and carefully observe to provide comprehensive feedback.

Dry and wet lab workshops

A multitude of research shows that validated dry and wet lab models can be useful in transferring surgical skills. There are several companies such as Simulated Ocular-Surgery[®] and Fusetec[®] that can provide custom-made synthetic models that can be used to practice a range of ophthalmic operations, including squint surgeries, trabeculectomies, and oculoplastic and corneal procedures. Some deaneries, including the Kent Surrey and Sussex Deanery in the United Kingdom, currently provide its junior trainees with a table-top microscope to practice suturing and essential microsurgical maneuvers at leisure. Deaneries should re-allocate study budgets to obtain these microscopes for a wider group of trainees to allow practice and maintain surgical skills. Local units can also work with assigned college tutors to set up dry lab workshops in

Table 1: Eyelogbook categories for ophthalmic procedures¹

Cataract surgery
Strabismus
Oculoplastic and lacrimal
Ptosis
Glaucoma
Corneal grafts
Retinal detachment and vitreoretinal
Retinal laser procedures

available eye-theaters to avail free time and improve surgical skills under supervision.

OUTPATIENT CLINICS

In the current situation, there are far fewer outpatient visits. Moreover, each patient should be examined by only one doctor if possible, to limit the chance of coronavirus transmission. These conditions have hampered trainees' education and experience to understand diagnosis and treatment of different eye conditions. We feel that education at clinics can be continued with appropriate workplace safety precautions including physical distancing and wearing masks and eye protection. One solution may be attaching slit-lamp of consultants to monitors to show any educationally interesting cases to medical students and trainees. Moreover, it would be beneficial for trainees to undertake wider reading and utilize the time in clinic to undertake a one-to-one tutorial with their supervisors. This time is also an opportunity to reflect more on their abilities and weaknesses and potentially a chance to develop a plan of self-improvement to be accomplished in the post-COVID era.

EDUCATIONAL MEETINGS

The cancellation of all educational gatherings has been countered by a notable increase in the number of online educational modalities. This presents an opportunity to improve the lack of pre-clinical ophthalmic education by providing more ophthalmology-related Free Open Access to Medical Education (FOAM/FOAMed).⁴ Medical students could be accessed through their universities or via pre-established sites. Several departments have already shifted to video conferencing to host local teaching to university students and trainees. There are also numerous teaching webinars being held at a national level such as the "C-19 eyeducation" program, and some ophthalmologists are collaborating on international webinars. Several conferences including European Society of Cataract and Refractive Surgery and World Ophthalmological Congress will be virtually held.

These formats provide an exciting and new format for widespread teaching and are available both live and recorded. An additional benefit of continuing to have these webinars can provide more fairness and access for the education of trainees, especially in developing countries.

One drawback of these formats is that they offer less opportunity for interactive debate, especially if there are many participants. It is also challenging to monitor delegates' attention and engagement through online media. A large screen to observe attendees and enough time for questions and answers are beneficial. Another issue is that webinars do not have the same scientific quality and some of them are more commercial. National ophthalmology councils and international ophthalmology organizations can supervise and rate them by awarding continuing professional development (CPD) points.

ASSESSMENT AND EXAMINATIONS

Currently, most examinations have been cancelled due to the huge disruption of routine life by COVID-19 in addition to the standstill of educational and clinical activities in universities and eye departments.

For competency-based objective-structured clinical examinations, validated and secure virtual examination delivery methods should be explored. Until a solution is found, a rational approach should be considered to avoid certifying any unready trainees during the disruption of the evaluation system, and delaying assessment and examination, which may be suitable for trainees who have significant time before graduation.

The Royal College of Ophthalmologists has announced that its written examinations will be held using online proctored systems. Universities are also looking to develop newer methods of delivering online-based examinations with or without open book policies.^{5,6} Although if possible, validated and secured virtual evaluation systems can be available for trainees who are about to finish their training program. Alternatively, assessment and examination could be postponed until a more normal state is achieved. Then, trainees may attend higher education levels or clinical activities if their previous evaluations show approved performance. Excluding national examinations, it seems that most other assessments can be done by respecting national physical distancing rules and avoiding large gathering.

NEW TRAINERS

As with any form of education, the "right" teacher is essential. They could be selected through a recruitment scheme/platform. This would also be an ideal opportunity to encourage recruitment of ophthalmic specialists who are "interested in teaching" as they have more time on their hands and so could ease their way into medical education, thus bringing more experience to the table. Applications could be further supported by incentives, such as "time compensation and letters of appreciation, and leave application" alongside CPD points.⁷

This scheme could be mirrored on a larger scale to include mentors for trainees (an accessible buddy scheme) to provide further educational, professional, and psychological support. To aid promotion, the scheme should be endorsed by RCOphth who would ensure only "the best surgical teachers" are "recruited to teach residents the surgical competencies".⁷

PSYCHOLOGICAL ASPECTS

It has been shown that many physicians, including trainees, are experiencing anxiety and depression. It may be due to social isolation, dealing with uncertainty, an increasing number of people affected by COVID-19, or sudden derailment of their ambition and plans. Mentors' support and contribution to resolution of the above could be helpful. It is also pivotal

for mentors to be mindful of their trainees' mood and offer professional support as necessary. Mentors should also be mindful of their own mood, by trying to stay healthy with adequate sleep and exercise. Eye departments should support group counseling, meditation, and mindfulness sessions.

CONCLUSION

We should accept that COVID-19 has adversely influenced our educational system in an unprecedented way. We were ambushed by this pandemic and should accept the challenges imposed upon us as mentors. This situation may continue for another year or two, so well-thought out plans to compensate for the lack of training are essential. We should teach and learn maximally from each case in outpatient department and the operating theaters. We should practice surgery through simulation and wet labs. We should act to provide better educational environments for our trainees, as discussed above. We should also take the opportunity to build an educational system more robust than currently exists. This new pandemic may increase our ability to advance in the fields of simulators, virtual training, and excellent, certified online resources. Upcoming trainees will reap the rewards of having better educational settings both in their eye departments and in online frameworks. We should not miss this opportunity to reset, adapt, and improve how we teach trainees and how they learn.

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REFERENCES

1. The Royal College of Ophthalmologists. London: Eyelogbook Surgical Categories. Available from: <https://www.eyelogbook.co.uk/login.html>. [cited 2020 June 11].
2. Naveed H, Hudson R, Khatib M, Bello F. Basic skin surgery interactive simulation: system description and randomised educational trial. *Adv Simul (Lond)*. 2018;3:14. Available from: <https://advancesinsimulation.biomedcentral.com/articles/10.1186/s41077-018-0074-5>. [cited 2020 June 11].
3. Sutherland LM, Middleton PF, Anthony A, Hamdorf J, Cregan P, Scott D, *et al.* Surgical simulation: A Systematic Review. *Ann Surg*. 2006;243:291-300.
4. Chadha N, Gooding H. Twelve tips for teaching ophthalmology in the undergraduate curriculum. *MedTeach*. 2020;1-6. Epub 2020 May 13.
5. The Royal College of Ophthalmologists. London: Examinations Noticeboard. Available from: <https://www.rcophth.ac.uk/examinations/notices-updates/>. [cited 2020 June 11].
6. Tapper J, Batty D, Savage M. Medical students take final exams online for first time, despite student concern. *The Guardian*. 2020 Mar 22.
7. Alfawaz AM. Ophthalmology resident surgical training: Can we do better? *Saudi J Ophthalmol*. 2019;33:159-62.

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