

EDITORIAL

Should there be global standards in ophthalmology training?

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It is a truism that training is essential to the fostering of competent medical practice. Training is also an important daily motivator in an individual's ongoing practice helping to drive inquisitive accrual of new information and expertise. This is particularly important in medicine, where knowledge acquired through textbooks will never suffice to make one a proficient physician [1, 2]. The passing on of acquired knowledge from an experienced clinician to a novice is fundamental to medical training.

The achievement of mastery via an apprenticeship training model is not new. The Royal College of Surgeons of Edinburgh's archives tell us that the "Full Mastership" (Fellowship) examination was available from 1505 (<https://library.rcsed.ac.uk>). It may not surprise those involved in training programmes in the UK to know that the duration of such apprenticeships was 5 to 7 years.

If the duration of training within the sphere of surgery was 5 to 7 years in 1505 what advancements has the world made in defining what a modern ophthalmological surgical apprenticeship is? Ophthalmology is one of the most sought after subspecialty surgical careers worldwide but there are no unifying standards in curricula, learning outcomes or domains of practice that are a prerequisite for qualification as an independent ophthalmology specialist. Is it time for international collaboration on ophthalmological training standards?

Trainers must bridge the generational educational divide, and all the encompassing challenges, when teaching trainees. The opportunities available to trainees to access information looks nothing like 20 years ago. Modern training programmes must assess the benefit to trainees of technological advances such as; chatbot and artificial intelligence guided knowledge accumulation [3, 4], simulation led practical skill development and virtual reality and robotic surgical models. At the same time trainers must be mindful of trainees being overwhelmed by seemingly limitless and frequently flawed, online content. When embarking on such a journey these pluripotent trainees can find themselves bewildered unless the training programme provides a good mentor [5].

If we accept that the practice of surgical apprenticeship training is successful should we now be defining standards of such apprenticeship schemes. The UK has a long history through the Royal Colleges of defining standards and outcomes of training but this is not reproduced across all international training schemes. Andrades et al. [6] in their article, highlighted vital differences in training patterns from seven different countries. Cataract is globally the most common pre-requisite procedure among all ophthalmological training curricula, but a large number of discrepancies were found in this single procedure. The required completed number of independent cases vary in different programmes from 50 to 350. Chan et al. [7, 8] in a survey from 6 English speaking countries found that the number of cataract procedures done by residents varied from 86 to 600. Given the ubiquitous nature of the procedure it is surprising that internationally there is such variation in what represents sufficient skill

for independent practice. It is also surprising that the number is not in alignment with published research such as evidence from Urbach [9] in Canada supporting a volume outcome relationship in cataract surgery with lower complications in higher volume surgeons. Variation across skills in all sub specialities of ophthalmology have been identified and the significant discrepancies noted above have been reported not only at international levels but within each country and even within individual institutions.

In the UK the training programme is for a defined time (7 years) with completion resulting in entry onto the Specialist Register as an Independent Practitioner. Ophthalmology is a very popular career choice in the UK. More than 900 applicants applied for the 2023 round of national recruitment with 70–75 jobs on offer to only the very top scoring candidates. By contrast in India the programme mandates further fellowships [of indeterminate length] after completion of the training programme to be independently qualified:- consequently Indian ophthalmology programmes struggle to attract the top ranking students [10–12].

The new UK 2024 Ophthalmology Curriculum has recognised the problem with post training fellowships so will afford trainees the opportunity to complete fellowship training within the training programme. It is not a time based curriculum but a skill based curriculum, however, it is expected to take 6 to 7 years to complete all levels. Trainees completing training will have Level 3 (level of a general ophthalmologist) in 12 Specialist Interest Areas and Level 4 (independent specialist) in 2 Specialist Interest Areas (e.g., cataract and glaucoma). The new ophthalmology curriculum attempts to define the standards expected of a generalist and a specialist (<https://www.rcophth.ac.uk/wp-content/uploads/2022/05/Proposed-OST-Curriculum-CAG-submission-October-2021-May-22-revision.pdf>).

Training programmes should not only aspire to define standards but to ensure equal opportunity. A study in the United States (data 2005–2017) [13, 14] is not alone in reporting significant gender differences in number of cataracts surgeries completed. The female ophthalmology residents operated less (7.8 to 22.2) and completed fewer total procedures (36.0 to 80.2) compared with their male counterparts. The GMC training survey of 2022 (https://www.gmc-uk.org/-/media/documents/national-training-survey-summary-report-2022-final_pdf-91826501.pdf) found that 42% of training ophthalmologists felt they had not been able to compensate for the loss of training opportunities resulting from the pandemic – far higher than the 23% across all specialities. By the end of ST2 training, only 37% had done more than 90 cataracts. This had never fallen below 56% before 2021. Training programmes cannot mitigate for pandemics but when defining standards programmes must ensure that they can be delivered to all [12].

Mastery of a surgical specialty appears to have taken 5–7 years since 1505. Despite the remarkable advancements in teaching tools there is still a lack of consistency in standards that should be reached across all domains of practice to define an independent ophthalmologist [15]. Establishing such standards should improve

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the standard of care delivered to patients worldwide while improving the knowledge and skills that we pass on as trainers.

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REFERENCES

- Densen P. Challenges and opportunities facing medical education. *Trans Am Clin Climatol Assoc.* 2011;122:48–58.
- van de Wiel MW, Van den Bossche P, Janssen S, Jossberger H. Exploring deliberate practice in medicine: how do physicians learn in the workplace? *Adv Health Sci Educ Theory Pr.* 2011;16:81–95. <https://doi.org/10.1007/s10459-010-9246-3>.
- Bohr A, Memarzadeh K. The rise of artificial intelligence in healthcare applications. *Artificial Intelligence in Healthcare.* 2020;25–60. <https://doi.org/10.1016/B978-0-12-818438-7.00002-2>.
- Gurnani B, Kaur K. Insights into career prospects after post-graduation in ophthalmology. *Indian J Ophthalmol.* 2021;69:3709–18. https://doi.org/10.4103/ijo.IJO_1597_21.
- Lee SS, Hooi SC, Pan T, Fong CHA, Samarasekera DD. Improving a newly adapted teaching and learning approach: collaborative learning cases using an action research. *Korean J Med Educ.* 2018;30:295–308. <https://doi.org/10.3946/kjme.2018.104>.
- González-Andrades M, Fung SSM, Potic J, Chidambaram JD, Karimi A, Quigley C, et al. Harmonizing ophthalmic residency surgical training across Europe: a proposed surgical curriculum. *Eye (Lond).* 2023. <https://doi.org/10.1038/s41433-023-02502-2>.
- Chan WH, Saedon H, Falcon MG. Postgraduate ophthalmic training: how do we compare. *Eye (Lond).* 2011;25:965–7. <https://doi.org/10.1038/eye.2011.120>.
- Fahim AT, Simunovic MP, Mammo Z, Mitry D, Pakzad-Vaezi K, Bradley P, et al. Comparison of ophthalmic training in 6 English-speaking countries. *Can J Ophthalmol.* 2016;51:212–8. <https://doi.org/10.1016/j.cjco.2016.04.018>.
- Bell CM, Hatch WW, Cernat G, Urbach DR. Surgeon volumes and selected patient outcomes in cataract surgery: a population-based analysis. *Ophthalmology.* 2007;114:405–10. <https://doi.org/10.1016/j.ophtha.2006.08.036>.
- Gurnani B, Kaur K, Bhandari S, Gireesh P, Sisodia P. Mentor-mentee relationship in ophthalmology—following the footsteps of stalwarts. *Indian J Ophthalmol.* 2022;70:3416–8. https://doi.org/10.4103/ijo.IJO_795_22.
- Kaur K, Gurnani B. Intricate scientometric analysis and citation trend of COVID-19-related publications in Indian Journal of Ophthalmology during COVID-19 pandemic. *Indian J Ophthalmol.* 2021;69:2202–10. https://doi.org/10.4103/ijo.IJO_829_21.
- Gurnani B, Kaur K. Augmenting postgraduate ophthalmology residency training during the COVID-19 pandemic. *Indian J Ophthalmol.* 2021;69:2878–9. https://doi.org/10.4103/ijo.IJO_2136_21.
- Tzamalīs A, Lamprogiannis L, Chalvatzis N, Symeonidis C, Dimitrakos S, Tsinoopoulos I. Training of resident ophthalmologists in cataract surgery: a comparative study of two approaches. *J Ophthalmol.* 2015;2015:932043. <https://doi.org/10.1155/2015/932043>.
- Gong D, Winn BJ, Beal CJ, Blomquist PH, Chen RW, Culican SM, et al. Gender differences in case volume among ophthalmology residents. *JAMA Ophthalmol.* 2019;137:1015–20. <https://doi.org/10.1001/jamaophthalmol.2019.2427>.
- Tso MO, Goldberg MF, Lee AG, Selvarajah S, Parrish RK II, Zagorski Z. An international strategic plan to preserve and restore vision: four curricula of ophthalmic education. *Am J Ophthalmol.* 2007;143:859–65.

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COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

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