

# Determining the needs of ophthalmic trainees entering into specialist training and how they can be met

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**Problem:** Starting ophthalmic specialty training can be daunting as new basic clinical examination and surgical skills must be acquired before meaningful assessment of patients can begin. No formal clinical induction currently exists with the aim to teach clinical and practical skills to new starters.

**Aim and objectives:** To determine the experience and needs of ophthalmic trainees entering into specialist training. Using this information we developed and implemented a clinical skills training programme for Ophthalmology ST1s.

**Intervention:** Using SMART objectives, PDSA cycles and Chartered Institute of Personnel Development guidance we implemented a clinical skills induction week. Pre-course skills evaluation took place in the form of a questionnaire in order to tailor the course content to the skill level of the group. Course material was made and simulation techniques devised for teaching practical skills. Qualitative data was collected via a pre- and post-course questionnaire.

**Outcome:** All 9 participants rated the course as “extremely useful” it increased their confidence in terms of commencing clinical ophthalmology. 100% of participants felt that this course should be delivered to new ST1s. All participants reported improved confidence in managing ophthalmic emergencies and their clinical skills technique.

**Lessons learned:** A sustainable induction programme was implemented tailored to the prior experience and skills of ST1 trainees. All participants felt it improved their confidence and clinical skills prior to commencing clinical activities. Basic clinical skills can be taught in a cost effective manner early on in postgraduate training.

**Keywords:** ophthalmic training, starting ophthalmology, ophthalmology run-through training, ophthalmic clinical skills, ophthalmic training needs

## What this paper adds

Basic ophthalmic skills are often neglected in undergraduate training, meaning postgraduate training programmes must provide this training opportunity. We show how modern educational approaches improve student satisfaction and confidence during the earliest stages of postgraduate training. We show a novel and cost effective approach to training new trainees that could potentially be applied nationally. The aim is to move away from traditional “see one, do one, teach one” and “learning on the job” approaches, which are not appropriate for use in the current NHS clinical climate.

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## Introduction

Ophthalmic specialty training in the United Kingdom has undergone significant reforms over the past two decades. The modernising medical careers (MMC) programme was introduced in 2007 with the aim of training an appropriately skilled work force with the use of a more time-efficient career structure. Prior to MMC, Ophthalmic training consisted initially of Senior House Officer jobs. This was usually followed by a highly competitive application for further higher surgical training and a national training number.<sup>1</sup>

Modern ophthalmic specialty training provides a run-through programme taking doctors from the end of foundation year 2 to obtaining certification of completion of training within seven years. For the 2018 August intake, there were 101 ST1 (Specialist trainee year one) training posts available, with 3.74 applications per post.<sup>2</sup> The application process uses a point based scoring system for candidate portfolios and interview performance in order to rank candidates and match them with potential job locations. Although it is vital that candidates show a commitment towards ophthalmology as a specialty and have to demonstrate insight into their potential career, it is likely that an individual is appointed to a post with no previous ophthalmic experience. Once awarded a postgraduate training position, Ophthalmic specialist training is delivered by separate “Schools of Ophthalmology” based throughout the UK.

Starting a career in ophthalmic run-through training can be demanding for new ST1 doctors. Traditional clinical skills that are taught at medical school in order to enable a systemic medical examination are not used regularly. They are replaced with new skills such as slit lamp biomicroscopy, fundus examination and applanation tonometry. These are learnt in addition to acquiring clinical knowledge and commencing microsurgery. Clinical examination skills are often expected to be learnt “on the job”, and are rarely formally taught in the same way, for example, using a stethoscope may well be during medical school. UK medical schools are no longer required to provide ophthalmic teaching<sup>3</sup> and our experience suggests that ophthalmic clinical skills are not routinely taught during medical school. Previous authors have expressed concern over the declining numbers of medical schools teaching ophthalmic theory and skills to medical students in both the UK and the US.<sup>4,5</sup> Those medical schools that do have an ophthalmic attachment average at 7.6 days of training (range 3.5–15 days).<sup>3</sup> This is not only concerning for the ophthalmic community as some of the brightest talents may never be exposed to a potential career in ophthalmology,

but ophthalmic skills, such as fundoscopy, are often necessary to perform a complete medical examination.<sup>4</sup>

Most deaneries allow new trainees with limited experience to be supernumerary in the clinical environment in the hope that this will allow time for basic clinical skills to be attained. However, with the ever-growing financial and clinical workload pressures within the NHS,<sup>6</sup> this can be a challenging environment in which to deliver basic clinical training. It can also be intimidating for trainees, and raises issues of patient safety, if clinical skills are learnt or practiced for the first time in a real life clinical setting. Other authors have also highlighted the effect that the European Working Time Directive (EWTD) can have on ophthalmic training, reducing the exposure to aspects of clinical training, specifically surgical experience in an emergency setting.<sup>1</sup>

Within the current training model, despite trainee doctors undergoing a corporate induction, no formal ophthalmic induction programme exists with the aim to teach clinical and practical skills to new starters. This has been highlighted by previous GMC trainee surveys.<sup>7</sup> Any such course could be challenging to deliver due the variable previous ophthalmic experience of new trainees entering into ophthalmic training. Our aim was to develop a sustainable clinical skills induction programme that could be delivered to future generations of new trainees. In addition we wanted to determine the skill levels of a trainee cohort entering into ophthalmic training, as well as their thoughts and ideas with regards to commencing ophthalmic training. Finally we assessed the impact of the induction programme on the confidence levels of the new trainees entering into a new specialty.

## Methods

Using SMART objectives and multiple PDSA cycles<sup>8</sup> we implemented a five day induction programme. We utilised the The Chartered Institute of Personnel and Development (CIPD) guidance<sup>9</sup> as a framework for how to plan and implement an induction process. As part of our first PDSA cycle, we performed a training needs analysis three months prior to the course being held. This used CIPD guidance to identify the basic skills required for commencing ophthalmic clinical practice. This was then aligned with the Royal College of Ophthalmologists curriculum,<sup>10</sup> using the clinical competencies that are expected to be obtained by the end of ST1 training as a framework for the content we would then cover during the course.

A second PDSA cycle was used for a pre-course skills evaluation in the form of an anonymised questionnaire. This

allowed us to tailor the course content to the current skill level of the group. The questionnaire contains qualitative and quantitative tools for subjective data collection. Both open and closed questions were used in conjunction with interval and ratio scales for measuring confidence in performing clinical skills and managing certain clinical scenarios.

After assessing the needs of the group, course material was written and simulation techniques were devised for teaching the necessary practical skills such as intra-ocular pressure measurement, central corneal thickness measurement, slit lamp examination, gonioscopy and foreign body removal. We discussed the management of common ophthalmic emergencies, consenting for cataract surgery and basic surgical techniques. We introduced the new trainees to the RCOphth e-portfolio and various online learning resources such as “e-learning for health”.

Trainees from two training programmes within Health Education North West joined together in order to improve time and cost effectiveness. The course was held at a mutually convenient venue, away from a clinical area, so that close supervision of clinical skills could take place without interruptions from day-to-day clinical activities.

The course was delivered by four registrar trainees (range ST2–7), using a combination of tutorial-based training and simulation techniques. A realistic and time-efficient structure to the week was used with the aim that clinical skills were learnt to a competent level. Qualitative and quantitative data was collected via a pre- and post-course questionnaire. Feedback was collected so that a third PDSA cycle was completed with the aim being to refine and tailor the course content for future years.

Our aim was to ensure that the course was repeatable and sustainable; course materials were made available to the deanery so that future courses can take place. Current participants were asked if they would help cascade the induction process the following year. Contact details were collected to arrange future courses.

## Results

9 ST1 trainees started run-through training in August 2016 across the two programmes (55.5% female, ave age 27.4 years). All 9 trainees participated in the induction programme with 100% attendance for the entire week. 100% of questionnaires were completed.

All 9 participants rated the course as 10/10 and “extremely useful”. All participants felt that attending the course increased their confidence in terms of commencing clinical ophthalmology with real patient contact. 100% of participants felt that this

induction week should be delivered to new ST1s and all participants stated that they would like to help deliver the course next year. All participants felt that their ability to manage ophthalmic emergencies in on-call scenarios was improved.

## Previous ophthalmic experience

66.6% (n=6) of participants had previous ophthalmic experience prior to applying for run-through training. This was a combination of staff/trust grade experience (n=2) and foundation post rotations (n=4). 33.3% had no prior ophthalmic experience (n=3). 44.4% of participants (n=4) had attended ophthalmic theatres to observe cases, 33.3% (n=3) had performed steps of intraocular surgery, 22.2% (n=2) had neither participated in nor observed live ophthalmic surgery.

## Ophthalmic clinical skills prior to commencing run-through training

### Slit-lamp examination

66.6% (n=6) participants had used a slit-lamp on more than 20 occasions. 22.2% (n=2) of participants had used a slit-lamp on less than 5 occasions and 11.1% (n=1) had never used a slit-lamp.

### Fundus visualisation

66.6% (n=6) participants had visualized a fundus using slit-lamp biomicroscopy. 33.3% (n=3) had never done so.

## Intra ocular pressure (IOP) measurement

55.5% (n=5) had measured IOP between 10 and 20 times. 44.4% (n=4) had never measured IOP.

## Central corneal thickness (CCT) measurement using ultrasound pachymeter

11.1% (n=1) had previously measured CCT.

## Corneal foreign body removal

55.5% (n=5) participants had removed at least one superficial corneal foreign body under local anaesthetic at the slit-lamp.

## Corneal scrape

55.5% (n=5) participants had performed a maximum of one corneal scrape.

## Snellen visual acuity testing

55.5% (n=5) participants had measured visual acuity more than 20 times. 44.4% (n=4) participants had measured a patient's visual acuity less than 5 times. 11.1% (n=1) had never measured this.

## Clinical exposure prior to ophthalmic specialty training

44.4% (n=4) participants had been involved in the management of a case of acute angle closure glaucoma, 33.3% (n=3) for Giant cell arteritis and 22.2% (n=2) endophthalmitis. 44.4% (n=4) of participants had previously observed a health care professional taking consent for routine cataract surgery. When asked to rate how confident participants were at consenting patients for routine cataract surgery out of 10, the mean subjective score was 3.33 (range 1–10).

## Thoughts prior to starting training

All participants were asked to indicate their feeling towards starting a career in clinical ophthalmology. Multiple responses were permitted. 55.5% responded as “nervous” (n=5), 77.7% as “excited” (n=7), 44.4% (n=4) as “apprehensive” and 33.3% as “Inspired” (n=3).

## Post course subjective evaluation

All 9 participants rated the course as “extremely useful”, giving a score of 10/10. All participants had improved confidence scores in terms of managing general ophthalmic emergencies. Mean improvement score for the group was +4 (range 2–7). 77.7% (n=7) participants felt their ability to measure IOP had improved (mean improvement was 2.89, range 0–7). All 9 participants felt that their ability to examine a fundus had improved (mean improvement 4.89 range 3–8), as well as their ability to consent patients for routine cataract surgery (mean improvement 3.66, range 3–7). 100% of participants felt that this induction week should be delivered to new ST1s and all participants stated that they would be interested in helping to deliver the course next year. All participants stated that they now better understood the role of the RCOphth e-portfolio, eye logbook and “deanery” structure. In addition all participants felt more confident after being shown how to access online educational resources to help co-ordinate their own future learning.

## Discussion

With declining numbers of medical schools providing ophthalmic training to medical students,<sup>3</sup> many trainees

entering into postgraduate training have limited ophthalmic knowledge and examination skills. Other authors have voiced their concerns over this lack of training within the literature, as a significant number (7.4%) of ophthalmic emergencies present to the general medical setting.<sup>4</sup>

Our cohort of trainees confirmed that a large proportion (33.3%) of medical graduates have no prior ophthalmic experience. Some may have obtained limited experience in foundation programme positions (44.4%), or non-training posts (22.2%). Some participants had never attended an ophthalmic operating theatre (22.2%). Our cohort highlights the variety of clinical capabilities that can exist amongst new starters on the postgraduate training programme; one third had used a slit lamp on less than five occasions and had never visualized a fundus, 44.4% had never measured IOP or performed a corneal scrape.

In order to be able to examine and assess patients in the clinical setting these skills need to be acquired early in training. Early acquisition makes clinical exposure to patients meaningful and productive for both the trainee ophthalmologist and patients and enables learning opportunities to be maximised. As teaching basic skills such as slit lamp biomicroscopy and IOP measurement is not viewed as a priority for current UK medical schools then these basic examination skills need to be acquired at postgraduate level. It is effective for training programmes to provide a formal induction programme where these clinical skills can be taught away from the busy clinical workplace. This can allow new trainees to develop skills in a less pressurised environment which is pertinent as our survey found that a significant proportion of new trainees already felt “nervous” or “apprehensive” about starting clinical ophthalmology. Removing the trainees initially from the direct clinical environment may reduce anxiety and stress, potentially having an improved impact upon their learning.<sup>11</sup> Using simulation techniques creates opportunities to improve competence and confidence before these skills are utilised on patients. A variety of ophthalmic simulation techniques have already been employed with good effect<sup>12–14</sup> and the Royal College of Ophthalmologists supports the increasing use of simulation within the curriculum, having incorporated this into the online eportfolio.

Additionally these routine basic clinical skills can be taught to new ST1s by more senior ophthalmic trainees. This is more cost effective than utilising consultant time and potentially frees up time to teach more advanced skills. The time away from clinics initially is very short when the trainee's ability to assess patients in clinic is

improved by this course. To the best of our knowledge, we are the first authors to explore how ophthalmic trainees can be introduced to clinical skills in their specialty training programme. The findings from this study show the potential benefits of new trainees undertaking a clinical skills induction week taught by trainees. All participants reported increased confidence in IOP measurement, slit-lamp use and fundoscopy. In addition, confidence in the management of basic ophthalmic emergencies and consenting for routine cataract surgery was increased. These are key topics that may be encountered within the earlier stages of training, and ones which new trainees should have a sound knowledge of as soon as possible in order to be safe practitioners. Although the number of participants in our group may appear to be small (n=9), with only 95 ophthalmic ST1 “run-through” jobs being awarded for August 2016, we have collected data from a significant proportion (9.5%) of those entering into training, with responses from 100% of the participants undergoing the induction programme. The overall small number of participants in this study can be viewed as a limitation, and ideally all new starters across the UK would be sampled which would give more comprehensive data. Other limitations include the subjective responses provided when measuring the effectiveness of learning. A more formal method of assessment would help to provide more objective evidence of skill improvement and acquisition. However this may not be the most effective measure of a successful induction programme. The aim of the course was to introduce the basic skills required to start a training post in ophthalmology and the participants were not expected to master these skills in this short space of time. Skills and knowledge were introduced in a structured way so that they can be practised and refined over the earliest stages of training. Therefore measuring proficiency in these skills may not be the most appropriate method.

A major strength of dedicating time outside of the clinical area for training means that different learning techniques can be applied in an attempt to accommodate different learning styles of the participants. It also permits a learner focused approach<sup>15</sup> allowing the learner to take an active role in their education, by indicating their needs prior to the course but also during the course as their learning requirements may change. This was facilitated by the second PDSA cycle (see methods), as it allowed participants to suggest further topics they would like to be discussed during the programme. This

also gives the trainers the opportunity to be responsive to the needs of the participants. Currently, limited information exists on the learning styles of trainee ophthalmologists, although other authors have reported the predominant learning style to be of the “converging” type.<sup>16</sup> By using this method, learners are said to “perceive a new experience as a theory or idea rather than as an event”. This knowledge is then processed by further active experimentation. Although it must be recognised that learning styles in this study were assessed specifically in relation to a practical surgical skill<sup>16</sup> it chimes with other findings in the literature that suggest surgeons from other specialties also tend to learn in this way.<sup>17,18</sup> We therefore incorporated Kolb’s learning cycle whenever possible in order to provide a holistic learning environment, therefore incorporating different learning styles, especially when teaching important clinical and practical skills.<sup>15</sup> As participants had access to clinical equipment on multiple occasions, repetition of skills was facilitated until basic competence was achieved.

One of the overarching aims of the induction was to create a sustainable programme, which could be packaged in a way that allows it to be delivered seamlessly to future generations of new starters. The findings from our survey were encouraging, as all participants felt that this programme should be delivered to future trainees, as well as expressing an interest in helping with the delivery of future courses. The feedback we received from the current participants can be acted upon to improve the content and delivery of future courses. There is potential for more “deaneries” to be amalgamated to create larger induction sessions in the future, thereby increasing standardisation throughout national training programmes, cost effectiveness and efficiency. This would allow the opportunity for data to be collected on a larger scale to help further define and tailor the requirements of trainees in the earliest stages of training. Our experience suggests that a formal training programme that covers the basic skills required for this specialty is a safe, effective and reproducible method of introducing new starters to ophthalmology.

## Conclusion

We have shown how an induction programme can improve the confidence and knowledge of ophthalmic trainees entering training schemes. We demonstrate how this programme can be utilised in a cost effective manner within the changing landscape and expectations of the current NHS system. We hope that such a programme can help patient and trainee satisfaction. We recommend that in the



future such programmes can be used for larger cohorts of trainees in order to standardise how new ophthalmologists begin clinical training within the UK setting.

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