A SHORT GUIDE TO A CAREER IN
OPHTHALMOLOGY
IN THE UK

2009
What is ophthalmology?

Ophthalmology is a branch of medicine dealing with the diagnosis, treatment, and prevention of diseases of the eye and visual system.

Ophthalmology is unique amongst medical specialties. The eye, its surrounding structures and the visual pathways may be affected by a great variety of clinical conditions. Their successful management depends on the ophthalmology team combining the diagnostic and therapeutic abilities of a physician and technical skills of a microsurgeon with an understanding of the whole patient. Ophthalmology integrates with many other branches of medicine – did you know that the commonest cause of visual impairment under the age of 65 years is diabetes?

One of the fundamental properties of the eye is that many of its components are transparent. This enables the details of its structure and abnormalities to be observed directly, in a manner not possible for most other parts of the human body.

The retina of a diabetic patient, modern treatment of diabetic retinopathy has prevented many patients from becoming blind.

Ophthalmologists are applying new discoveries from the basic sciences to clinical practice. Innovative technologies for imaging the eye have helped to diagnose and treat many conditions, and there have been numerous advances in microsurgical techniques that have improved surgical outcomes. Novel treatments for degenerative diseases of the retina give hope to patients with a previously poor prognosis. These developments make it a very exciting time for the specialty.

What is an ophthalmologist?

An ophthalmologist is a medically trained doctor who commonly acts as both physician and surgeon. (S)He examines, diagnoses and treats diseases and injuries in and around the eye.

The majority of ophthalmologists are “surgical ophthalmologists”. Most of the working week is spent seeing patients in outpatient clinics with many requiring follow-up of an ongoing condition. Although patients often have conditions related to age, such as cataract, glaucoma and macular degeneration, diseases of the eye and its
surrounding structures may be part of an underlying systemic disease, e.g. diabetes. There is therefore, close collaboration with many other specialists, including diabetologists, rheumatologists, neurologists, neurosurgeons, ENT and maxillofacial surgeons, plastic surgeons, paediatricians and geneticists.

A minority of patients require procedures using different kinds of laser or surgery, usually performed under local anaesthesia and as a day case. Most ophthalmologists have two operating sessions per week. The surgical workload of the general ophthalmologist may include cataract extraction, squint and glaucoma surgery, oculoplastic and nasolacrimal surgery. Many consultants now specialise in a particular area although most also continue to perform cataract surgery. Did you know that over 300,000 cataract operations per year are performed under the NHS through small incision (keyhole) surgery known as phakoemulsification, making this the commonest operation under the NHS and of any type of surgery undertaken in the world?

**Specialist interests in ophthalmology**

- Cataract and Refractive Surgery
- Corneal and External Diseases
- Glaucoma
- Medical Ophthalmology
- Medical Retina
- Neuro-ophthalmology
- Ocular Oncology
- Oculoplastics
- Orbital/lacrimal disorders
- Paediatric Ophthalmology
- Strabismus
- Vitreoretinal surgery

Eye emergencies, of which there are a large number, may be seen first by a general casualty officer but in larger departments a separate Eye Casualty department is staffed by ophthalmologists and/or nurse practitioners. Patients may present with conditions that include a simple foreign body on the cornea, chemical burns, angle-closure glaucoma, blockage to the blood supply to the retina, and retinal detachment. Even patients with brain tumours may first present to an eye casualty department. Consultant ophthalmologists take part in an on-call rota but night work is unusual.

**Do ophthalmologists work as part of a team?**

Apart from ophthalmologists other health professionals play an important role in the care of ophthalmic patients, and teamwork is essential to ophthalmic practice.

**Hospital Doctors and General Practitioners**

Patients may be referred from or to other medical teams for assessment. Ophthalmologists liaise particularly with neurologists, rheumatologists, diabetologists and endocrinologists. GPs will often be the first port of call for patients with eye disease and may refer to, or seek advice from, the ophthalmology unit.
Ophthalmic Nurses have training and experience in ophthalmology, and provide specialist support for eye clinics, wards and operating theatres. Some also undergo further training to become nurse practitioners, working in casualty and assessing patients with routine ophthalmic conditions.

Orthoptists undergo professional training to become expert in problems of ocular movement, binocular vision and children’s sight. Dealing with children with squint (where the eyes are not parallel, e.g. may turn in or out) forms a large part of their work. They may work as part of the team within the eye unit itself, or independently as community orthoptists.

Optometrists (aka Opticians) also undergo professional training. Many practise in the High Street, refracting patients and prescribing and dispensing spectacles. They perform screening examinations to detect conditions, such as diabetes and glaucoma. Some work part-time or full-time within the Hospital Eye Service, where they provide specialist services such as the fitting of complex contact lenses and low vision aids. Increasingly they are assessing patients with particular eye problems such as glaucoma. They have limited but increasing rights to prescribe pharmacological treatments.

Electrophysiologists mainly work in larger hospital eye departments and provide electrodiagnostic and monitoring services for patients with suspected or established inherited retinal diseases or visual pathway disorders.

Visual Function Technicians carry out a large number of investigations including visual field testing. They may take pictures of the eye (together with photographers) using various techniques, such as digital fundus imaging, B-scan ultrasound, optical coherence tomography and tomographic imaging of the optic nerve.

Ocular Prosthetists are responsible for the supply and fitting of ocular and oculofacial prostheses (artificial eyes) when tissue has been lost through trauma or surgery.

Ophthalmic Photographers use sophisticated equipment to photograph the face, eyelids, outer eye, and retina. Photographic (including angiogram) and video techniques are essential in the diagnosis and monitoring of many ophthalmic disorders. This is becoming an increasingly important role in an eye unit.

How do I become an ophthalmologist?

Training in Ophthalmology

Training in medicine has undergone significant change following the introduction of Modernising Medical Careers (MMC). It is likely to continue to change as MMC develops. This account represents the current training structure.

Examining a patient’s eye with a slit lamp microscope
Outline of Specialist Training
Following the two foundation years doctors apply for specialist training; in ophthalmology this normally lasts 7 years, is competence based and leads to a Certificate of Completion of Training (CCT). The essential, or core, requirements are described by a series of nested learning outcomes. These are derived from a description of what consultant ophthalmologists, as health care professionals in the UK, are able to do and how they approach their practice. During the first two years the trainee should acquire the general clinical skills of an ophthalmologist, and have a basic knowledge of the conditions covered by the specialty. As well as general and specialist clinics and ophthalmic casualty work the trainee will attend two theatre sessions per week. During these sessions he/she should master the commonly performed procedures, and assist at more complex operations. Trainees may want to become involved in clinical research projects.

As trainees become more senior the depth of their knowledge increases and they learn specialist surgical and clinical skills according to a curriculum set by the College. More time is spent in both general and specialist clinics, with an average of two to three theatre and laser sessions per week. Regular assessment of trainees’ progress is undertaken throughout the training. These include Case-based Discussions (CbD), Direct Observation of Procedural Skills (DOPS), Objective Assessment of Surgical and Technical Skills (OSATS). There is also an annual assessment panel to ensure that trainees are progressing as expected.

Becoming an Academic Ophthalmologist
A clinical academic training pathway has been established through the National Institute for Health Research (NIHR) in the form of Academic Clinical Fellowships (ACF) and Clinical Lecturerships (CL). ACFs are usually at ST1-3 level and provide a clinical and academic training environment to prepare an application for a Training Fellowship leading to a PhD (or equivalent). CLs are aimed at trainees who are advanced in their specialty training, have completed a research doctorate or equivalent and who show outstanding potential for continuing a career in academic medicine.

Ophthalmic Trainees Group
Trainees are represented by the Ophthalmic Trainees’ Group (OTG); members sit on RCOphth committees to represent trainees’ views. The group also organises meetings for trainees and acts as a forum to allow discussion of common problems that arise during training.

Flexible Training
Trainees unable to work full-time for personal reasons may undertake an equivalent training programme, but over a longer period. Local arrangements are made through the Regional Postgraduate Dean.
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The new examination structure for a trainee in Ophthalmology

FRCOphth Part 1

No previous experience in ophthalmology is necessary for candidates to sit the Part 1 FRCOphth and the structure is based on the learning outcomes from the curriculum for the first two years of training. This will include basic sciences, theoretical optics and some pathology.

The examination will consist of two papers including:
120 MCQ questions over 3 hours
OSE examination in booklet format over 2 hours

Topics the examination assesses are:
Anatomy - orbit and adnexae, ocular anatomy, cranial cavity, CNS, head and neck, cardiovascular system
Physiology – general principles, ocular, physiology of vision
Biochemistry and Cell Biology
Pathology – general principles, basic ocular pathology, microbiology, immunology
Growth and senescence
Optics – physical and geometric, clinical
Therapeutics
Lasers
Epidemiology and Evidence Based Medicine
Instrument Technology
Biostatistics
Clinical Genetics
Patient Investigations

The Refraction Certificate
This tests the understanding of clinical refraction, particularly retinoscopy, focimetry and the prescription of glasses.

All applicants must have passed the FRCOphth Part 1 by the end of the second year and the Refraction Certificate by the end of the third year of training.

FRCOphth Part 2

Written Component
A 2 hour MCQ paper of 90 questions consisting of 1 best answer out of 4 options;
A 3 hour EMQ paper of 45 questions each consisting of 2 parts, 90 items in total.
Candidates successfully completing the Written Component will automatically sit the Practical Component of the examination approximately 10 weeks later.

Practical Component
The first part of the practical component is a Structured Viva consisting of 5 stations, each with 2 examiners, of 10 minutes' duration each. Each station will allow assessment of decision-making, clinical reasoning and judgement.
Station 1: Patient investigations and data interpretation
Station 2: Patient management
Station 3: Health promotion and disease prevention
Station 4: Attitudes, ethics and responsibilities
Station 5: Audit, research and evidence based practice

The next part is a Clinical Examination, each with 2 examiners; each station will allow assessment of knowledge of basic and clinical sciences and communication skills as follows:
Station 1: Cataract and anterior segment (15 minutes)
Station 2: Glaucoma and lid (15 minutes)
Station 3: Posterior segment (15 minutes)
Station 4: Strabismus and orbit (15 minutes)
Station 5: Medicine and Neurology (30 minutes)
Station 6: Communication Skills (10 minutes)

Final accreditation is achieved when all the competencies set down in the curriculum are achieved and normally the FRCOphth Part 2 must be passed by Year 7 in Ophthalmic Specialist Training.
What happens at the end of training?

Consultant Ophthalmologists
The majority of trainees aim to become consultants, for which the FRCOphth (or equivalent) and CCT are essential. There are approximately 760 ophthalmic consultant posts in the UK. Consultants are responsible for all the patients in their care, and for supervising and training junior doctors. Posts may be full-time, part-time or job-share. There are many applicants for each consultant job and the specialty is highly competitive.

Academic Ophthalmologists
There are many academic departments in ophthalmology throughout the UK that are staffed by Professors, Senior Lecturers and Clinical Lecturers. Professors and Senior Lecturers have honorary consultant contracts and Lecturers have honorary SpR/StR contracts. Ophthalmologists wishing to pursue an academic career would normally be required to undertake a higher degree during their training, and should seek advice early on clinical training requirements from their nearest academic ophthalmology department.

Other Career Options
Some doctors may not wish to become consultants or may be unable to pursue their career to consultant level, but still want to continue a career in ophthalmology. Fortunately there are other options available. The doctors in the following grades are known as Staff and Associate Specialist doctors (SAS doctors):

Clinical Assistants are doctors who have some basic training in ophthalmology and usually work in the outpatient department on a sessional basis. These posts are particularly suitable for those wanting to work part-time, or to combine an interest in ophthalmology with a commitment in another specialty, such as general practice.

For a Staff Grade or Trust Grade post, completion of basic specialist training is required. The type of work performed is dependent upon the individual’s interests and experience. Posts may be full-time or part-time and many perform surgery in addition to outpatient work. Some may provide on call cover for their department. Some SAS doctors run departments such as Diabetic Retinal Screening Services. Under a new contract implemented in 2008 these posts will be renamed as Specialty Doctor.

An Associate Specialist is a personal appointment made for an individual with appropriate qualifications and training who has generally spent a number of years as a staff grade ophthalmologist. This is a more senior appointment and these ophthalmologists commonly have a subspecialty interest, and many work unsupervised and perform surgery. The 2008 contract means that no further appointments will be made to this grade after March 2009.

“I am more interested in the medical side than the surgical side. What can I do?”

Medical Ophthalmology
The primary purpose of the specialty is the medical assessment, investigation, diagnosis and management of systematic disorders affecting vision, particularly:

- Inflammatory disorders affecting vision (e.g. uveitis, scleritis, corneal graft rejection, systemic vasculitis)
- Vascular disorders affecting vision (e.g. diabetes, arteriosclerosis, hypertension, stroke)
- Neurological disorders affecting vision (e.g. multiple sclerosis, stroke, pituitary disorders, thyroid eye disease)
- Public visual health (e.g. diabetic retinopathy screening)
- Other important aspects include:
  - Genetic disorders affecting vision (e.g. retinitis pigmentosa)
  - Retina specific disorders affecting vision (e.g. age-related macular degeneration)
  - Visual rehabilitation (e.g. age-related macular degeneration, stroke)
  - Ophthalmic procedures particularly laser therapy for diabetic retinopathy and local injection therapy for age-related macular degeneration
It is predominantly outpatient based. The workload of an ophthalmic physician is varied ranging from the personal delivery of care such as laser therapy for diabetic retinopathy through to the intellectual challenge of neuro-ophthalmic disorders. As the majority of conditions are responsive to therapy, it is very rewarding.

Training is under the auspices of The Joint Royal Colleges of Physicians Training Board (JRCPTB). Like other medical specialities, trainees first complete core medical training, and then enter a four-year competence based medical ophthalmology curriculum.

For further information visit http://www.jrcptb.org.uk.

The future of ophthalmology

What will a career in ophthalmology be like in five years or ten years from now? It is possible to make some guesses based on the trends of the last five or ten years and from what can be predicted about the numbers of people reaching old age in the years ahead. However, it is much more difficult to predict the effect of factors such as new treatments and the effects of future government policy on the way in which ophthalmology is practised.

We can be sure that the number of people reaching old age and extreme old age will continue to rise until around 2030 and therefore that the number of people requiring treatment for cataract, glaucoma, age-related maculopathy and type 2 diabetes will also rise. Effective new treatments for age-related maculopathy are already having an effect on the way in which hospital eye departments are organised and staffed.

Twenty years ago, most consultant ophthalmologists were general ophthalmologists. Now, nearly all consultant ophthalmologist posts require a subspecialty interest such as glaucoma or oculoplastics, and in larger eye units, consultants may work exclusively in one subspecialty of ophthalmology. This trend looks likely to continue and in the future, it may be the case that cataract surgery will become a subspecialty in its own right, with the nation’s demand for cataract surgery being served by a smaller number of ophthalmologists undertaking high-volume operating lists. The number of ophthalmologists who do not operate at all will probably increase.

Current health policy in Britain provides an incentive for more care to be delivered in general practice or community care settings. Although ophthalmology is still a strongly hospital-based specialty, this is likely to change, as there is an increasing demand for primary care ophthalmology to be delivered in places other than hospitals. This will require a new type of ophthalmologist with skills in teaching, team-building and aspects of public health and epidemiology.

Ophthalmology will continue to encompass a rich mixture of medical, surgical and epidemiological challenges. We can be fairly sure that it will never be boring.

What can I do as a medical student?

Ophthalmology is a highly competitive specialty. If, as a medical student, you are seriously considering a career in ophthalmology, it is worthwhile thinking how you might enhance your portfolio. You may like to include ophthalmology in one of your student selected components/special study modules and your elective period. The Patrick Trevor-Roper Undergraduate Travel Award www.rcophth.ac.uk is open to all undergraduate medical students from the UK and Eire only. There are two awards to be made annually, each for the sum of £550. This money can be used to fund electives in ophthalmology and may be spent on travelling or subsistence. The Duke Elder Undergraduate Prize Examination www.rcophth.ac.uk takes place once a year in Medical Schools throughout the country. This is a competitive national EMQ examination run by The Royal College of Ophthalmologists.

Your medical school may also award an ophthalmology prize; find out from your eye department or medical school office if this is the case. The following medical schools have awards but this is not an exhaustive list: Barts and the London, Belfast, Birmingham, Bristol, Edinburgh, Liverpool, Newcastle, Nottingham, UCL.
Training in ophthalmology: the trainee’s perspective

Miss Katya Tambe, ASTO in Oculoplastics
The University Hospital of Leicester

“I started my medical career in India aspiring to be a hand surgeon, until I realised I first had to do general surgery involving messy abdomens and smelly abscesses!!! I was a surgeon by heart and the speciality that appealed above the rest was OPHTHALMOLOGY! I have never regretted my decision.

I can think of no other speciality that is more interesting, diverse and rewarding. There are patients that I can treat medically while others need surgery. Which other speciality in medicine allows one to look at the pathology specimen without having to dissect the part out? It is aptly said that ‘the eye is the window to the body’!

The surgical aspect is the most thrilling and varied. One might ask how much is there to do in an eye? Believe it or not one has the option to subspecialise in cornea, glaucoma, medical retina, vitreo-retinal surgery and paediatrics. If you are into gadgetry and advanced technology – look no further than ophthalmology. There is an ever increasing array of diagnostic and surgical instruments at your disposal. I’d give a special mention to oculoplastic surgery as that is my sub-speciality interest encompassing almost every tissue around the eye and every age group. The orbital work reminds me of my first aspiration to work with bones!

Ophthalmology is a great career option for males and females, for those who wish to have a family life and for those who want to dedicate their life to medicine. We are one of the few surgical branches who still have a so-called nine to five job (if there ever was one in medicine!). Busy days and a good night’s sleep is the norm. It’s a dynamic branch with lots of opportunity to do research if you are academically inclined.

If anyone is looking for career guidance I would say if you have a passion for surgery, technology, like attention to detail, have good manual dexterity, binocular vision and want to make a difference to a patient’s life, ophthalmology would top the charts!

Volunteer work as an ophthalmologist in the developing world

Jag Gandhi, Specialist Registrar
Manchester Royal Eye Hospital

The highest satisfaction in my time in ophthalmology has been obtained during those periods when I have been out to Sub-Saharan African countries as a volunteer cataract surgeon. As such, I have travelled to countries such as Namibia, Rwanda, Ghana, Kenya and Zambia. As a very junior trainee (senior house officer) I found two consultant colleagues who made expeditions to Africa to offer their skills in an annual African ‘eye camp’. This visit was usually of one or two weeks’ duration. I have subsequently continued to participate in such eye care programmes in Sub-Saharan Africa in the grade of specialist registrar.

Visual impairment and blindness, as you might expect, is very commonplace in poor parts of the world. Thus there are opportunities at all levels of clinical experience to participate in eye care ventures. The time you decide to invest can vary considerably, extending anywhere from a fortnight to a two-year sabbatical. The ophthalmic trainee with a year or two of experience may wish to practise ophthalmology with a chiefly medical slant. Surgical work is best left to a stage where the doctor concerned has learned how to handle ocular tissues competently and this point especially applies to intraocular surgery. We must recall that the aim, as always, is to offer our patients the best possible care and so appreciate that operating in the developing world in a modest clinical environment is a challenge even for experienced surgeons.

More than half of the blindness in the developing world is secondary to cataract and therefore most visiting ophthalmologists aim to undertake cataract surgery because it is a problem with an excellent solution. This is a gratifying
privilege; the ability to literally ‘treat’ blindness in one person after another. The epidemiology of visual impairment in the underdeveloped world is dominated by cataract blindness, glaucoma and trachoma. Although you enjoy satisfaction as a clinician when you practise in the developed world, working in the developing world elevates you to a new (and previously unconsidered) plane of personal satisfaction. Additionally, a whole set of issues regarding medical care in poor parts of the world present themselves to you with memorable immediacy and thus give you an entirely new perspective, both as a person and as a doctor.

In the age of the Internet it is remarkably easy to research your interest in contributing to eye care in poor parts of the world. There are a myriad of non-governmental organisations (NGOs) to be found that welcome volunteer ophthalmic doctors. Examples are ‘Unite For Sight’, an effective American organisation founded by a medical student, which values the support of volunteers at different stages of professional development, from medical student to senior consultant. Similarly, another charitable body is Surgical Eye Expeditions (SEE) International, whose eye camps are mainly undertaken by doctors in the registrar and consultant grades. By working with a well-established NGO your trip is better organised and therefore more useful all round, not least because you are supported by a host ophthalmologist throughout.

**Finding out more**

If you are already at medical school talk to members of the local eye department, seek the perspective of both junior and senior members of the team. Find out what opportunities there are locally to gain practical experience in ophthalmology as a medical student. Have you considered doing an ophthalmic elective in this country or abroad?

The Royal College of Ophthalmologists (RCOphth), previously part of the Royal College of Surgeons of England, is a young and enthusiastic college; it has just celebrated its first 20 years as an independent college. Look at the rest of the website to see what is currently happening in the ophthalmic world.

**Additional documents**

The College will supply additional information about curricula of training, examinations, training of overseas doctors and other topics on request.

**Useful contacts**

Your local Department of Ophthalmology

Your Regional Postgraduate Dean

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The British Medical Association
Medical Career and Information Service
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Tel No: 020 7387 4499
Fax No: 020 7383 6403
Website: [www.bma.org.uk](http://www.bma.org.uk)

The General Medical Council
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Website: [www.gmc-uk.org](http://www.gmc-uk.org)