OPHTHALMOLOGY

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Ophthalmology Objectives

What are the prevalent ophthalmology conditions in London? How does this differ from worldwide?

In the UK, the most prevalent eye conditions requiring medical care include cataracts, diabetic retinopathy, age-related macular degeneration and glaucoma. Untreated, these conditions can lead to blindness. However, in developed countries, screening and early intervention has reduced vision loss.

The prevalence of these conditions is the same worldwide but additionally there is a high prevalence of infectious conditions such as acute and chronic conjunctivitis, keratitis and particularly trachoma in developing countries. Trachoma, an infectious eye disease, is the leading cause of the world's infectious blindness (WHO, 2011).

Worldwide, cataracts are the commonest cause of blindness. Cataract surgery is the most commonly performed surgery and one of the most cost-effective healthcare interventions (WHO, 2011). In developed countries, age-related macular degeneration is the commonest causes of blindness (WHO, 2011).

How is eye care delivered in the UK and how does this differ worldwide?

In the UK, eye care within the NHS involves vision testing and correction, the diagnosis, treatment and management of eye disease and rehabilitation of eye conditions. Eye care is delivered by a multidisciplinary team including optometrists, opticians, specialist eye care nurses and ophthalmologists. Patients are referred to specialist hospital clinics by their GP and optician, attend as part of their diabetic screening or are seen referred from the emergency department.

Ophthalmologists are physicians with a medical degree and prescribe medication, perform surgical procedures and treat systemic diseases. Optometrists provide primary vision care including sight testing and correction and diagnosing certain eye diseases. Both work together in treating and managing patients with eye diseases. This is similar across developed countries. In the USA this also involves private healthcare systems.

In the UK, opticians can prescribe corrective eye-wear and may perform slit-lamp examinations. This differs worldwide; in Italy opticians generally dispense and construct corrective eye-wear prescribed by an ophthalmologist.

In developing countries, access to eye care and surgical procedures is limited. Clinics are located in cities rather than rural areas. This means for many people, reversible causes of blindness such as cataracts, are left untreated. For this reason, the WHO and international agency for the prevention of blindness (IAPB) initiated "Vision 2020: The right to sight" plan to eliminate causes of avoidable blindness by developing and improving national eye care programmes worldwide by the year 2020.

Identify the risk factors in developing the prevalent eye diseases in the UK? How can they be prevented?

Each eye condition has different risk factors and preventative measures.

A cataract is a lens opacification resulting in changes to the lens transparency and refractive index. There are several types which are classified by location. Primary cataracts are mainly age-related conditions and arise from prolonged exposure to ultraviolet light or radiation. Thus, wearing ultraviolet-protecting sunglasses slows cataract development (Neale *et al.*, 2003). Secondary cataracts develop from systemic diseases such as diabetes, eye trauma or ocular disease or drugs

such as corticosteroids or antipsychotics. Such patients must be informed to have regular eye care checks for the early detection of vision loss and cataract development. Congenital cataracts are due to genetic effects and a family history may predispose to an earlier onset of cataracts.

Diabetic retinopathy is a severe complication of diabetes mellitus. The main risk factor is prolonged diabetes with poor glycaemic control. The other risk factors are the same as for developing type 2 diabetes mellitus and include hypertension, obesity and hypercholesterolemia. Type I diabetics (juvenile onset) have an increased risk of developing diabetic retinopathies because they are metabolically exposed to higher levels of hyperglycaemia and have had diabetes for much longer.

Diabetic retinopathy affects 80% of all patients who have had diabetes for 10 years or more. However, studies indicate 90% of these new cases could be reduced with regular diabetic screening including monitoring the eyes and early therapeutic intervention along with good long-term glycaemic control (Kertes and Johnson, 2007).

Glaucoma is an optic neuropathy with loss of retinal ganglion cells, affecting vision. There are several causes. Main risk factors include occular hypertension, an unstable blood pressure, African descent, increasing age associated with thinner corneal thickness and hypermetropia and a family history. Secondary glaucoma risk factors include prolonged steroid use, central vein occlusion, eye injury and uveitis (Kanski and Bowling, 2005). Glaucoma can also be congenital or due to genetic effects.

Prevention involves glaucoma screening as part of a standard eye examination. Patients at risk have annual dilated eye examinations including measuring intraocular pressure (tonometry) and anterior angle chamber angle (gonioscopy).

Chronic conjunctivitis is persistent inflammation and hyperaemia of the conjunctiva caused by infection, allergy or infrared/ultraviolet light. Trachoma is caused by *Chlamydia trachomatis*, spread by direct contact with eye, nose and throat secretions from affected individuals, contact with fomites (inanimate objects) or by mechanical transmission by flies. Untreated, repeated trachoma infections result in entropion, painful permanent blindness where the eyelids turn inward, causing the eyelashes to scratch the cornea (trichiasis). Children with dirty faces, facilitating exchange of infected ocular discharge are most susceptible to infection, although severe vision loss may not be noticed until adulthood (Mabey *et al.*, 2003; Wright *et al.*, 2008).

In developing countries, prevention of infectious eye conditions involves resolving poverty; overcrowding, poor hygiene (lack of clean water, proximity to cattle and absence of toilets) and improving access to eye care (Taylor, 2008). Family members in contact with the patient may contract the disease so tracing and prescribing prophylactic antibiotics is essential. The SAFE: strategy to eliminate trachoma (WHO objective) aims to provide surgery for trichiasis, antibiotics for active infection, community-based education on facial cleanliness and environmental improvements by the year 2020.

Learn how to perform a slit-lamp examination and ophthalmology examination

Attending various specialist clinics and clerking patients pre-operatively has provided opportunities to learn and practise performing fundoscopy and slit-lamp examinations, which I can now perform competently. Examining patients under supervision and presenting my findings has enabled me to gain instant feedback to improve my technical skills. Being able to use the slit-lamp correctly will allow me to identify patients with ocular conditions as a junior doctor, particularly within the emergency department. Using the slit-lamp also allows me to obtain a clearer view of the anterior chamber of the eye and better visualisation of the retina using a fundoscopy slit-lamp lens. To further my skills I would like to gain more practise performing tonometry and using the indirect ophthalmoscope.

Know how to recognise and manage acute eye symptoms as a junior doctor
I now have a better understanding of the common conditions I may encounter as a junior doctor, which may include the red eye, pain, sudden vision loss, diplopia, photophobia and photopsia. For each of these eye conditions I must practise taking a patient history and examination before requesting relevant investigations and formulating suitable treatments based on the literature and advice from consulting with a senior ophthalmologist.

Explore ophthalmology as a possible future career
I have enjoyed my placement at Moorfields Eye hospital and it has given me an excellent insight into Ophthalmology as a future career. I have a better understanding of the structure of examinations and training posts and how I can tailor my FY1 placement to include taster weeks in ophthalmology. I discovered that ophthalmology combines both medicine and surgery having observed both clinics and theatre sessions and attended weekly teaching. It was interesting to observe the delicate surgical procedures and to explore this further I have arranged to attend a microsurgery course to improve my manual dexterity required for ophthalmic surgery and to develop my skills.

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