



Quality of Care in Ophthalmology

Vision is the most significant of our senses. It is important for good quality of life and its loss leads to morbidity, disability, loss of productivity and depression. The impairment is prevalent. In the United Kingdom nearly one million people are severely visually impaired (1). More than 3.4 million (3%) Americans aged 40 and older are either blind (visual acuity of 2/200 or have a visual field of less than 20 degrees) or visually impaired (visual acuity of 20/40 or less). The social, personal and financial cost of the disability is high: it is estimated that blindness and visual impairment cost the US Federal Government \$22 billion annually on direct cost of treatment, loss of personal income and social security disability benefits (2). As the population ages, the impact of visual disability will grow and society should invest in well-organized eye care of good quality.

The current developments in health care aim to increase the role of services provided on community level and in primary care settings. However, eye care is still predominantly hospital-based because the facilities and equipment required for diagnosis, investigation and treatment are complex and expensive and require qualified and experienced personnel. Basically, these consist of a slit lamp microscope to give a magnified cross sectional view of the eye, direct and indirect ophthalmoscopes to examine the retina, a tonometer to measure intraocular pressure, accessories to test the size and sensitivity of visual fields and lenses to measure refraction. Additional equipment enables more detailed examination and includes photographic techniques, keratometry, ultrasound and electrodiagnostic tests, as well as imaging of globe, orbit and brain. More complicated procedures require sterile operating theatre facilities with operating microscope and microsurgical instruments. Hospital-based care has three main tasks. First, to provide diagnosis and treatment which restores reversible loss of vision, eg. cataract. Secondly, to monitor and treat progressive eye disease and prevent further loss of sight, eg. glaucoma and diabetic retinopathy. Thirdly, to offer information and assistance to those whose visual loss is irreversible, e.g., age related macular degeneration. In order to provide care of high quality rational organization of this service is essential. Most of the care is provided in outpatient clinics where people experience their first and often only contact with ophthalmological hospital services. These clinics have a very heavy workload that could adversely af-

fect the quality of care: in England an estimated 3.8 million people visit ophthalmological clinics each year (3). It is very difficult to reduce the number of referrals since primary care physicians do not feel confident to manage their patients' eye complaints and refer most to specialists (4). A reduction can be achieved by having ophthalmically trained physicians and optometrists active in community-based eye clinics that filter out minor problems (5). An additional step towards improving the quality of care is to have hospital services sub-specialize and set up separate clinics for cataract, glaucoma, diabetic retinopathy and other clinical entities.

Cataract is opacity of the lens which can block or scatter light. It is most commonly caused by aging of its proteins, leads to a reduction of vision in 23% of those aged 65-74, and increases with age (6). If left untreated it eventually leads to severe visual impairment. It cannot be prevented, but the vision can be improved by removing the opacized lens and replacing it with an inert lens implant (7). The demand for surgery is rising since cataract is age-related and the quality of life improves in those operated. Hence, because of long waiting lists there is a move towards day case surgery under local anesthesia, proven safe and as effective as well as more cost effective than inpatient surgery, provided it takes place in a dedicated environment with access to hospital admission and consultant expertise in the postoperative period. A study found that only 6.5% of 680 patients were not suitable and another 11% preferred not to have day case surgery (8). Quality can be assessed by the adherence with available clearly defined criteria for appropriateness for surgery (9), informed consent including discussion of the type of surgery and anesthetic, as well as audit of outcomes in terms of operative and postoperative complications and of visual function.

Glaucoma is a progressive loss of visual field due to damage to optic disc fibers. It affects 5% of the population by 65 years and becomes more common with advancing age (10). Risk factors for the glaucomatous damage include high intraocular pressure, structural weakness of ocular proteins and problems with optic nerve blood flow (11). There is no cure for the condition and the aim of treatment is to slow the rate of field loss by reducing intraocular pressure. Glaucoma requires lifelong follow-up of visual field changes,

intraocular pressure and optic nerve appearance and decision to change treatment accordingly, options being surgery, laser or medical reduction of the pressure. Each alternative has its benefits and risks and the choice should be tailored to the individual patient (12). Therefore, main aspects of the quality of glaucoma care are patient compliance with treatment and an understanding of the disease and emphasis on the reporting side effects and awareness of treatment risks, as well as the skill of providers in assessing the condition and their knowledge of treatment alternatives.

Diabetic retinopathy occurs as a result of retinal capillary damage caused by metabolic consequences of diabetes. It is the leading cause of blindness in the working age population (13). Early treatment with laser photocoagulation of the retina prevents visual loss in many cases and it is therefore important to screen patients with diabetes to detect treatable retinopathy (14). The treatment of diabetic retinopathy has been investigated by extensive controlled trials since the 1980s (15); these have established the features and classification of diabetic retinopathy that benefit from retinal laser treatment and have resulted in guidelines, which are internationally accepted and applied. Quality of care is assessed by effective screening for retinopathy and the extent of conformance with the guidelines in its treatment.

Age related macular degeneration is the commonest cause of blind registration in the United Kingdom (13) and one of the four most common causes in the USA, in addition to cataract, glaucoma and diabetic retinopathy (2). Preventive treatment with zinc and oxidants may reduce the risk and progression of the condition (16); it can be not be treated, but in a few cases laser treatment can be successful in delaying visual loss. Quality of care can be assessed by the extent of identification of patients with the potentially treatable disease and by the degree of providing advice and support to those for whom no treatment is possible. In the latter case, it is important to discuss the condition with the patient and making her/him aware that despite the loss of central vision navigational vision would remain. Patients with macular degeneration lose their central vision, but the peripheral is preserved. So called navigational vision is the capability of viewing objects, even reading, using peripheral vision (under various angles) and thereby retain independence in activities of daily living. Also, blind registration should be recommended as well as advice on inexpensive low vision aids, although the patient often needs time to come to terms with visual loss before these become useful (17).

Since the late 1950s, activities to assess and improve the quality of care have emerged in most fields of medicine and surgery, and have benefited patients and helped professionals to provide better care. In ophthalmology such activities started to develop only 20 years ago, in the 1980s. In the English language literature, the first mention of quality assurance in ophthalmology appeared in medical journals in Australia in the middle 1980s (18,19), and in the US in 1989 (20). From then on, many interesting quality of care

studies in ophthalmology were reported. The majority of these addressed quality of eye care in patients with diabetes (21-27). In the late 1990s studies of the quality of life as outcome measures of ophthalmic conditions and care started (28-31) and utilization issues began to be addressed (32,33); in the beginning of the 21st century efficiency and effectiveness of two ophthalmology departments was studied showing that they cannot be separated from financial incentives that can stimulate or discourage rational and evidence-based clinical behavior (34). Also, reports began to appear on patients' perspectives of their eye care (35-39). Other issues, related to quality of eye care were patients' knowledge of their ocular disease, prognosis and treatment (40), relative importance that older people attach to hospital waiting lists, surgical complications and the involvement of junior surgeons in cataract operations (41), applicability and reliability of factors that lead to misdiagnosis in ophthalmology (42), and risk factors of ophthalmic malpractice (43).

Clinical performance guidelines provide the link between research and clinical practice and conformance with them is a reliable, prospective method for the improvement of the quality of care. The preparation of guidelines for eye care is in its infancy, except for those that address diabetic retinopathy. The Royal College of Ophthalmologists in the UK and The American Academy of Ophthalmology have issued booklets advising on aspects of care for some conditions with recommendations based on scientific evidence whenever possible, and a consensus when no supporting evidence exists. These can guide clinicians in the management of common conditions and can be usefully modified to suit local conditions (44). The Academy's Preferred Practice Patterns (PPP) are likely to become de facto guidelines. Data suggest that the PPP for glaucoma care is followed well (45,46), whereas those for community care of patients with corneal ulcers, for which no PPP exist, show a low level of conformance with accepted practice (47).

Scientific evidence shows that care of good quality, ie detection and treatment of diabetic retinopathy, cataract removal surgery, control of glaucoma, prevention of age-related macular degeneration, can prevent much blindness and visual impairment. Primary care physicians, optometrists and ophthalmologists should remain alert to these most common and treatable conditions in their patients and systematically investigate, understand and improve the quality of care provided. The American Academy of Ophthalmology is taking a strong, positive position in developing standards for good quality of care (48).

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