

A course in low vision practice

PART 1 – Terminology, numbers and causes

In the first of a new series based on the Welsh Low Vision Scheme training programme, **Barbara Ryan** and **Tom Margrain** look at the prevalence and nature of visually impairing disease. CET Module 1813

TERMINOLOGY

It is often confusing to know which words or definitions to use when talking about people who have an eye condition that cannot be ameliorated. Low vision, partial sight, subnormal vision, visual impairment and visual handicap are just some of the terms that are used, often as if they were synonyms, yet they describe quite different aspects of sight loss. Using the correct terminology is not a case of being politically correct. In the environment of inter-agency working, it is essential that people from all disciplines use the same language in the same way.

Definitions in legislation

Many different definitions of visual impairment are used for the purpose of legislation and certification throughout the world. For the purpose of registration in the UK, two levels are used. The statutory definition for the purposes of registration as a blind person under the National Assistance Act, 1948, is that the person is 'so blind as to be unable to perform any work for which eyesight is essential'. Partial sight is not defined in the act but a guideline for functional definition is given as: 'Substantially and permanently handicapped by defective vision caused by congenital, illness or injury.' Recently, new forms (CVI, LVI and RVI), have been adopted in some parts of the UK.¹ In these, the term 'blind' has been replaced by 'severely sight impaired' and 'sight impaired' has replaced 'partial sight'. Details of the certification and registration processes and definitions in use in the UK are outlined in more detail in a future article.

The definitions given in the 1948 National Assistance Act² use outdated language and refer to the functional ability of a person and hence are open to interpretation. Guidelines are given on the forms about

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A COURSE IN LOW VISION PRACTICE

In this series of 12 articles, Barbara Ryan and Tom Margrain from the School of Optometry and Vision Sciences, Cardiff University outline some of the basic theory required for low vision practice. These articles are based on modules which were developed to train the optometrists and dispensing opticians who provide The Welsh Low Vision Service which has been developed and is funded by the Welsh Assembly Government

the level of impairment (including visual acuity and visual field) which help make the registration process more objective. However, as recognised by the World Health Organisation (see in the section on disability and impairment), the relationship between a person's visual acuity and visual field and how they are able to function in everyday life is not straightforward and may vary enormously for a number of reasons such as personality, expectations, physical ability, emotional state and age. For example, someone with a congenital eye condition might be less disabled than someone whose eye condition develops later in life, resulting in a similar level of vision. Also, there are many other visual functions apart from visual acuity and visual field (such as contrast sensitivity) which, if diminished, cause a reduction in the person's ability to function.

So, while these guidelines are useful, if they are interpreted too literally they may exclude those who are very disabled by an eye disease/disorder.

Graded definitions

As well as definitions in legislation for registration purposes, graded defini-

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tions for the level of impairment have been devised. These are mainly used in research. The best known of these are the ones recommended by the World Health Organisation³ and summarised in Table 1. It can be seen that low vision is defined as less than 6/18. Some studies have defined visual impairment as less than 6/12.^{4,5}

Definitions of low vision

The WHO³ defines low vision as: visual acuity less than 6/18 to light perception or a visual field less than 10 degrees in the better eye with best possible correction. Once again, like the guidelines used for registration, the problem with this definition is that there may be people with a visual impairment whose ability to perform everyday tasks is greatly reduced, but who do not fall within this definition. For example, someone who wants to drive whose distance VA is 6/12-

In the UK, low vision has not been defined in legislation. However, in 1999 in the UK a definition for low vision was adopted by the Low Vision Services Consensus Group⁶ (which had representation from all the relevant professions and organisations): 'A person with low vision is one who has an impairment of visual function for whom full remediation is not possible by conventional spectacles, contact lenses or medical intervention and which causes restriction in that person's everyday life.'

This definition uses the person's functional ability rather than any specific level of acuity or other clinical measurements of function to define low vision. It goes on to say: 'Such a person's level of functioning may be improved by providing low vision services including the use of low vision aids, environmental modification and or training techniques. This definition includes but is not limited to those who are registered as blind and partially sighted.'

TABLE 1. WHO Classification of vision ICD-10³

Category	Grade	Criteria (in the better eye)
Normal vision	0	6/7.5 or better
Near normal vision	0	6/9 to 6/18
Low Vision		
Moderate visual impairment	1	<6/18 to 6/60
Severe visual impairment	2	<6/60 to 3/60
Blind		
Profound visual impairment	3	<3/60 to 1/60 or a visual field <10 degrees
Near total visual impairment	4	<1/60 or a visual field <5 degrees
Total visual impairment	5	No light perception

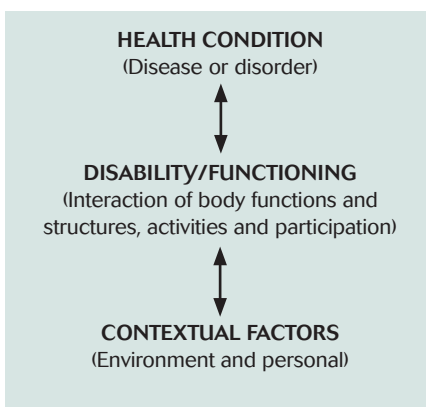


FIGURE 1. ICF model of disability and functioning 2002

Definitions of impairment and disability

In UK legislation, disability has been defined as 'a physical or mental impairment which has a substantial and long-term adverse effect on a person's ability to carry out normal day-to-day activities'.⁷ The definition includes impairments affecting the senses, such as sight and hearing. However, an exception is made when people wear glasses or contact lenses – it is the effect on the person's

vision, while wearing their glasses or contact lenses that is considered.

In 2002 the WHO revised its definitions and The International Classification of Functioning, Disability and Health (ICF)⁸ replaced the International Classification of Impairment, Disabilities and Handicaps (ICIDH 1980).³

The new classification is a radical shift from the old one. It recognises that almost every human being will experience a decrement in health, and thereby experience disability at some time in their lives. It moves away from just focusing on conditions that affect a minority of people and mainstreams disability by placing all health conditions on a common ruler of health and disability.

A person's level of disability and functioning are viewed as outcomes of both disease and contextual factors (Figure 1). These contextual factors include environmental factors (for example, the size and contrast of print or architectural features) and personal factors (such as education, previous experience, age and coping style).

In this new definition, disability is, therefore, an umbrella term which includes impairments, activity limitations and participation restrictions. It is not just a function of a disease but the activi-

TABLE 2. Examples of health conditions, activity limitations, participation restrictions

Health condition	Impairments	Activity limitations	Participation restrictions
Disease/disorder	Problem in bodily function. Significant loss	Difficulty an individual has executing a task	Problems an individual may experience in involvement in life situations
Macular degeneration	Loss of central visual field	Difficulty recognising friends	People's reaction's leads to breakdown of social relationships
		Difficulty reading small poor contrast print	Poor print on packaging leads to difficulty cooking independently
Cataract	Increased glare sensitivity	Difficulty driving a car	Can't go to visit daughter once a week
Large esotropia	Reduced perception of depth	None	Teasing at school leads to reluctance to take part in after-school activities

TABLE 3. The number of people registered as blind and partially sighted (PS) by age in England in 2000

Age	0 to 4	5 to 17	18 to 49	50 to 64	65 to 75	75+	Total
Registered blind	710	3,150	16,450	13,360	15,780	108,360	157,810
Registered PS	620	3,650	14,030	11,500	16,160	102,710	148,670
Total registered	1,330	6,800	30,480	24,860	31,940	211,070	306,480
%Total registered	0.44	2.22	9.95	8.11	10.42	68.87	100

ties the person wants to do and how they participate in a given life situation. These in turn are affected by who the person is and what the world they want to function in is like (Table 2).

The ICF defines impairment as 'problems in body function or structure'. Impairment, therefore, refers to the functional consequence of a disease or disorder. In visual terms, impairment includes reduction in visual acuity, visual field, contrast sensitivity and colour vision.

To put these terms into the context of services, in general, the aim of medical intervention and prevention is to prevent or alleviate impairment. The aim of assistive devices and rehabilitation services is to limit or prevent activity limitation. Public education, anti-discrimination law and environmental changes are to prevent or limit participation restriction.

Terms no longer in use

The terms handicapped and visually subnormal are not found in any of the current national or international definitions.

THE NUMBER OF PEOPLE WITH LOW VISION

There have not been any large population-based surveys to give us all the information we need about the number of people with low vision in the UK. However, there are some figures available that allow us to obtain useful estimates.

In 1988, OPCS found that there were 1.7 million people in the UK who had a 'seeing difficulty'.⁹ However, we do not know how many of these had previously uncorrected refraction or undetected treatable eye disease, of which there is known to be a significant amount.^{4,10}

Ophthalmologists certify people as blind and partially sighted (or severely sight impaired and sighted impaired). This data has been collected nationally and is available over long periods of

time. The registers potentially provide an opportunity to monitor the incidence of the most important causes of visual impairment. Currently, there are over 359,000 people registered as having a sight problem in the UK.¹¹⁻¹³ However, it is widely acknowledged that this figure underestimates the true extent of registerable visual impairment in the population by two to three-fold.^{4,10,14-16} Whatever the extent of the underestimation, there is little doubt that many people who could be registered are not.

The overwhelming majority of studies that have measured visual acuity in the UK population have been in the older population.^{4,10,15,17} Because of this, and differences between studies in reporting results and criteria for defining visual impairment, it is not possible to pool the results to obtain a single estimate. Therefore, for the purpose of this article registration data is used to illustrate trends in the numbers and causes of visual impairment.

The number of people with low vision is rising. In the last 20 years the number of people registered as blind and partially sighted has almost doubled (Figure 2).¹¹ The number of new blind registrations is falling, but the number of new partially sighted registrations is increasing (Figure 3).

About 80 per cent of people with a visual impairment are over the age of 65 years (Table 3) and the prevalence increases dramatically with age (Figure 4).¹¹ A recent community-based UK-wide MRC trial found that one in five people over the age of 75 and one in two over the age of 90 had binocular visual acuity less than 6/12.¹⁷ The actual prevalence of low vision in the older population is likely to be even higher because this study excluded people in long-term nursing care where a higher prevalence has been shown.¹⁸ The magnitude of the problem will undoubtedly grow. Age is known to be a significant risk factor for vision loss¹⁹ and the number of people aged 60 and over is projected to increase by 57 per cent over the next 30 years.²⁰

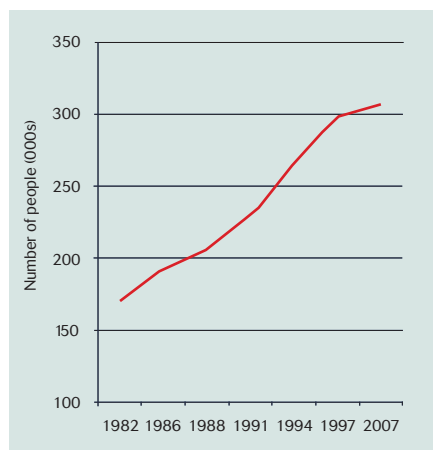


FIGURE 2. People on the blind and partially sighted register in England 1982-2000

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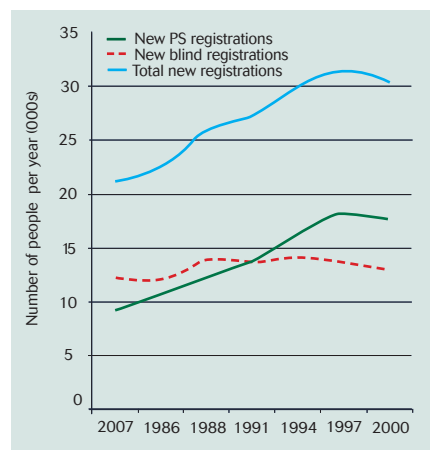
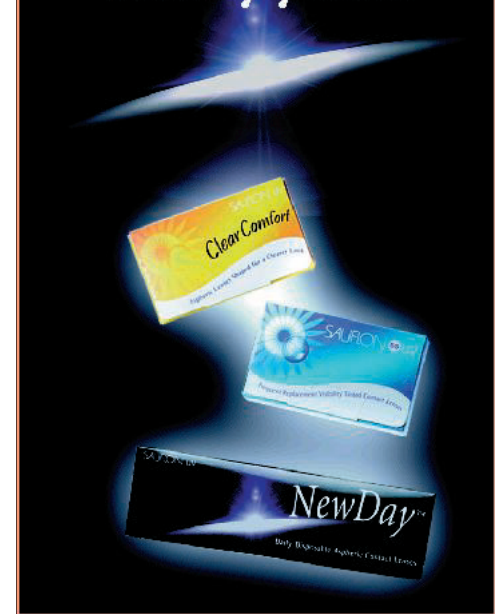


FIGURE 3. Newly registered as blind and partially sighted in England 1982-2000

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Causes of low vision

A detailed description of the pathology causing low vision is outside the remit of this article. It is assumed that as part of their everyday practice, practitioners will be aware of the aetiology, detection, treatment and referral criteria for abnormal ocular conditions.

Despite its imperfections, the registration process provides us with a considerable body of data on the causes of visual impairment. Figure 5 shows the incidence of the different conditions causing blind registration in England and Wales for the year ending March 1991.¹⁹ Data on partial sight registrations shows very similar percentages.

The most common cause of blindness registration was 'degeneration of the posterior pole'—largely macular degeneration (MD), accounting for 49.3 per cent of all new registrations that year. This is an increase from 37 per cent in 1981. Glaucoma, diabetic retinopathy and cataract accounted for 18.4 per cent of blind registrations, down from 1981, which hopefully reflects better detection and treatment. The proportion of these four main eye diseases as a cause of blindness for all ages is very similar to that of older people.

The major causes of blindness in the 0 to 15 year old age group are distinctly different from those in the adult popula-

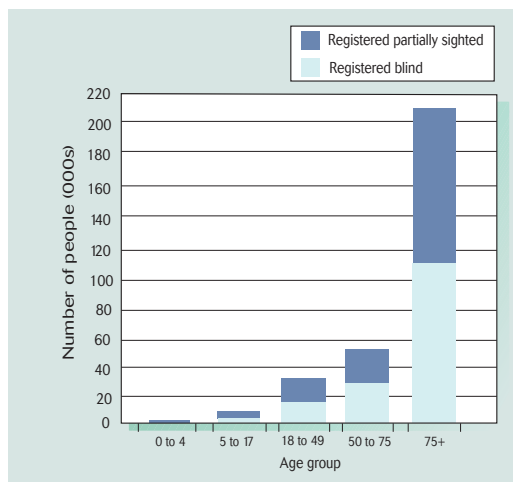


FIGURE 4. People on the register of blind and partially sighted by age group (England 2000)

common cause of blindness. Most common among these dystrophies is retinitis pigmentosa for which there is currently no cure.

tion (Figure 6).¹⁹ It appears that prenatal factors (including genetic causes) are involved in the majority of cases. There is also a high incidence of other mental or physical impairments among this group and just over 50 per cent of visually impaired children have additional disabilities.²¹

In the population of working age, the ocular complications of diabetes and glaucoma are the most common causes of blindness (Figure 7).¹⁹ It is hoped that as the screening and treatment of these continues to improve, the number of people of working age becoming blind will decrease. In the same group, the hereditary retinal disorders are also a

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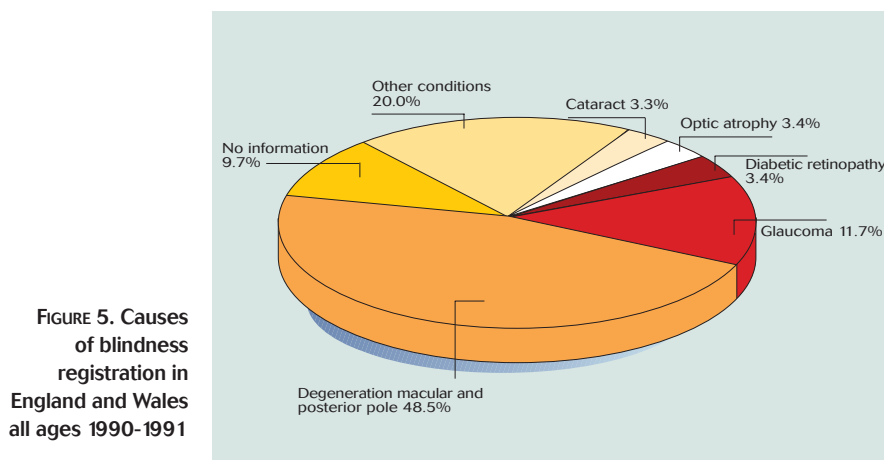


FIGURE 5. Causes of blindness registration in England and Wales all ages 1990-1991

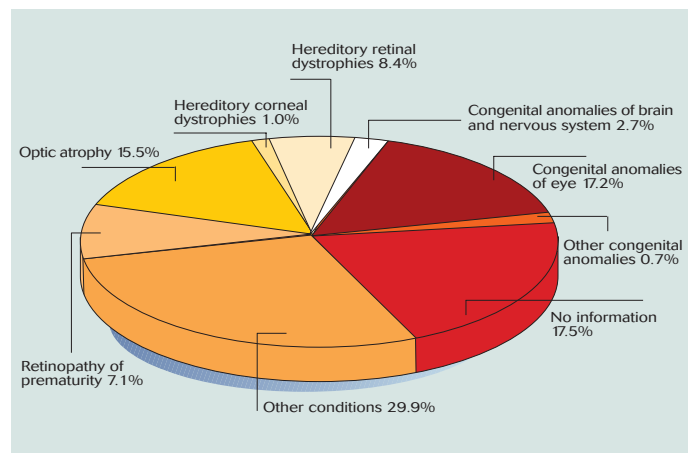


FIGURE 6. Causes of blindness in England and Wales ages 0-15 (1990-1991)

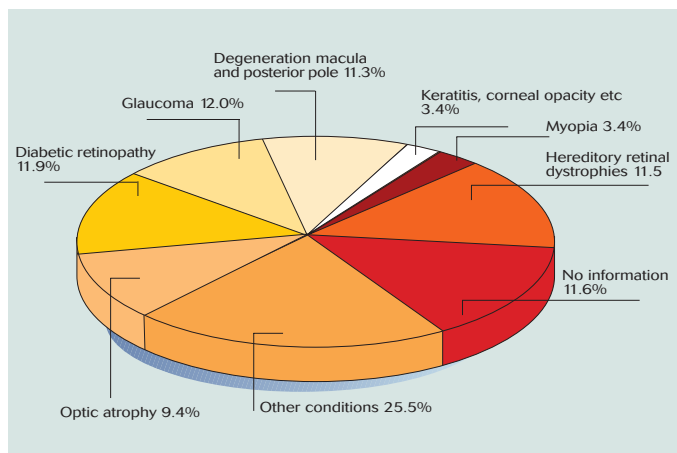


FIGURE 7. Causes of blindness in England and Wales ages 16-64 (1990-1991)

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MULTIPLE-CHOICE QUESTIONS

1 Which statement is correct?

- A About 50 per cent of people with a visual impairment are over the age of 60
- B The number of new blind registrations each year is increasing dramatically
- C Due to better screening and treatment it is predicted that the number of people with a visual impairment will decrease over the next 20 years
- D The number of of people newly registered as partially sighted in a year has nearly doubled in the last 20 years

2 Which one of the following statements is incorrect regarding childhood blindness?

- A In the UK, hereditary factors account for most cases of childhood blindness
- B There is also a high incidence of other mental or physical impairments amongst children with a visual impairment
- C Under 10 per cent of blindness in children in the five-to-15-year-old age group is caused by optic atrophy
- D Retinopathy of prematurity accounts for about 7 per cent of registrations in children in the UK

3 A person's lack of participation is determined by:

- A Their emotional state
- B The part of the eye that is affected by the eye condition
- C The lack of adaptations of society to their disability
- D Their social skills

4 The World Health Organisation defines low vision as:

- A Less than 6/12
- B Less than 6/18 or a visual field less than 5°
- C Less than 6/12 or a visual field less than 10°
- D Less than 6/18 or a visual field less than 10°

5 What proportion of people over the age of 75 have a visual impairment in the UK?

- A 10 per cent
- B 20 per cent
- C 40 per cent
- D 50 per cent

6 About what percentage of people of working age is blinded by glaucoma?

- A 24 per cent
- B 35 per cent
- C 12 per cent
- D 11 per cent

Please note there is no enclosed answer sheet for this module. Questions must be answered online at www.opticianonline.net The deadline for response is September 15

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