VISUAL STANDARDS FOR DRIVING

1 Introduction

Approximately 95% of the sensory input to the brain required for driving comes from vision. However surprisingly, there is little evidence that defects of vision alone cause road accidents. Nevertheless adequate standards of vision need to be set for drivers on the busy roads of the United Kingdom. These standards are set down either by statutory requirement or guidance from professional bodies such as the Royal College of Ophthalmologists and the Secretary of State for Transport’s Honorary Advisory Panel for Vision and Driving. They are applied by the Driver and Vehicle Licensing Agency (DVLA).

2 Visual Acuity

*Group 1 drivers (Car and other light vehicles)*

All drivers are required by Law to read a standard sized number plate in good light at 20.5 metres.

In September 2001, the new format number plate was introduced on all new registrations and on replacement number plates. The characters are narrower than the current number plate and this new format plate should be read at 20 metres.

The number plate test is absolute in law and not open to interpretation. A driver who is unable to satisfy this requirement is guilty of an offence under Section 96 of the Road Traffic Act 1988.

The number plate test corresponds to a binocular visual acuity of approximately 6/10 Snellen acuity. However, it is important to stress that visual acuity measurements in a consulting room may not correspond to the ability to read the standard number plate at the roadside.

*Group 2 drivers (Large Goods and Passenger Carrying Vehicles)*

All new Group 2 applicants since 1/1/97 must by law have:

- A visual acuity of at least 6/9 in the better eye and
- A visual acuity of at least 6/12 in the worse eye and
- If these are achieved by correction, the uncorrected visual acuity in each eye must be no less than 3/60.

Failure on any one of these clauses will disbar

There are individuals who may not be able to satisfy the above standard yet may be able to drive provided that they supply a certificate of recent driving experience and

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* For further details of vehicle classification refer to the DVLA (www.dvla.gov.uk)
have not during the period of 10 years immediately before the date of the application been involved in any road accident in which defective eyesight was a contributing factor. These so called “grandfather rights” are set out in Section 68 of the Motor vehicles (Driving Licences) Regulations 1996. The standard which applies depends on the time when the individual was first licensed. These licence holders need to consult the DVLA about their continuing entitlement to hold a Group 2 licence.

3 Visual Fields

The minimum visual field for driving in the United Kingdom is defined by the DVLA which relies firstly on the 2nd European Directive from the European Union and secondly on advice from the Honorary Advisory Panel for Vision and Driving. The visual field standards are (unlike the visual acuity standard) not statutory. Nevertheless, if the standard is not achieved the applicant is considered by the Road Traffic Act 1988, to have a “relevant disability” and will not be permitted to hold a driving licence.

Group 1 drivers

The visual standard for ordinary driving is currently defined as “a field of at least 120° on the horizontal measured using the Goldmann III4e setting or the equivalent. In addition there should be no significant defect in the binocular field which encroaches within 20° of fixation either above or below the horizontal meridian.” This means that homonymous or bitemporal defects which come close to fixation whether hemianopic or quadrantanopic are not usually accepted for safe driving. Subject to strict criteria, drivers who have been driving for at least 5 years with static field defects which do not satisfy the standard, and who have non-progressive eye conditions, may be considered on an individual basis.

Methods of testing

The DVLA now commonly request visual field information from appointed optometrists. It is recommended that hospital eye units register with the DVLA to perform driving visual fields for their existing patients. This is to allow the hospital to gain further information regarding their patients and to permit the patient to perform the test in a familiar environment.

The binocular Esterman program (10dB stimulus intensity) on the Humphrey visual field analyser is now the most appropriate method of testing. Similar programs on other automated perimeters are also appropriate. All fields must be of acceptable performance quality. Any automated test showing more than 20% of false positives is invalid and must be repeated. It is accepted that performance may improve with repeated attempts. For each test the best result from a maximum of three attempts will be used.

The test may be performed with or without spectacles. It is recommended that spectacles be worn for the first attempt. Heavy frames and high ametropia, however, may restrict the peripheral field. The better visual field result will be accepted.
Bilateral uniocular central full-threshold testing alone is inadequate for the driving standard. However, these tests may be requested by the DVLA to help assess the depth and extent of the defect.

Some subjects may be unable to use an automated perimeter. In these circumstances the use of the Goldmann perimeter is acceptable. There should be accurate monitoring of fixation and adequate assessment of static points within the margins of the field using an experienced perimetrerist. Older perimeters such as the Lister, Aimark or Priestley-Smith devices are not acceptable.

**Interpretation of visual field defects and their relevance to driving**

**a) General principals**

Visual fields are required by the DVLA where a medical condition has produced a field defect in both eyes. This would include glaucoma, cerebrovascular accidents, bilateral laser treatment for retinopathies, retinitis pigmentosa and other congenital defects.

Where there are central visual field defects produced by a progressive condition such as glaucoma, diabetic retinopathy or retinitis pigmentosa, the following defects measured using a binocular Esterman program will generally be regarded as an acceptable or insignificant central loss in the area within 20° of fixation:

- Scattered single missed points
- A single cluster of 2 or 3 contiguous points

It therefore follows that the following is an unacceptable or significant loss:

- A cluster of 4 or more contiguous points that lies either wholly or partly within the central 20° area
- Loss consisting of both a single cluster of 3 contiguous missed points up to and including 20° of fixation, and any additional separate missed point(s) within the central 20° area.

Visual field defects that are considered to be static and of longstanding duration that do not otherwise meet the visual field standard may, under certain circumstances, be considered to be “exceptional cases”. Such defects may include:

- Those identified after passing the driving test but resulting from a congenital cause or from early childhood pathology that is non-progressive
- Other defects arising after passing the driving test, produced by a single, non-progressive event such as a cerebrovascular accident, head injury or neurosurgery.

Licensing of these patients will be considered where medical enquiry confirms consultant support of full adaptation to the defect, with no residual visual
disability affecting day-to-day living. Evidence of a satisfactory practical driving assessment at an approved centre will also usually be required.

The DVLA is aware that there are previous licence holders whose licences were revoked in the past because of longstanding visual field defects. These patients are being identified and may be invited to reapply. Ophthalmologists may be aware of such patients and should encourage them to inform the medical advisers at the DVLA if they wish their licence to drive to be reconsidered.

b) Specific disorders

Homonymous neurological defects

Retro-chiasmal defects may prevent a complete 120° horizontal standard from being attained, and may also encroach within 20° of fixation. A field defect within 20° of fixation which is contiguous with a large homonymous defect is considered “significant” as defined above and will therefore fail the standard.

Longstanding, static homonymous defects which are revealed as a result of a routine optometric investigation may be considered to be an “exceptional case” as defined above. Such patients should be advised to notify the medical advisers at the DVLA.

Pituitary lesions

Lesions near the optic chiasm may give rise to bitemporal hemianopia. Esterman testing may produce a binocular field which extends to 120° by fusion of the left and right hemifields. In order to prevent the two halves of the visual field dissociating (hemislide phenomenon) there must be adequate input from both hemifields through at least one eye. Monocular Esterman testing may be requested by the DVLA in these situations.

Glaucoma

Binocular field defects arising as a result of longstanding glaucoma are characteristically progressive, irregular and paracentral. An isolated scotoma within 20° of fixation is “significant” if it is large (see above for definition of significant).

Diabetic Retinopathy and Laser Treatment

Bilateral diabetic maculopathy or focal laser treatment of it may cause a bilateral central field defect. In addition, substantial peripheral retinal ablation often causes patchy, inconsistent visual field performance. Significant defects as defined above may arise in these situations and the patient should be advised to notify the DVLA.

It should be part of the informed consent to point out to the patient that although laser treatment is essential to prevent or slow down the progression of their disease, it may in itself jeopardise their ability to drive.
Monocularity

Monocularity is not a bar to a Group 1 driving licence if the field standard is achieved. A normal blind spot may be recorded as up to two missed spots within the central 20° of a binocular Esterman test but it is not regarded as “significant” in this situation.

Group 2 drivers

The 2nd European Directive requires a normal binocular field of vision for Group 2 drivers and this standard is applied in the UK. Using the binocular Esterman program, the Group 2 driver should be able to achieve a full binocular visual field with no missed spots at all in the central 20°. Any missed spots in the peripheral field should be carefully analysed to ensure that these are not artefactual due to eyelids or spectacle frames. Some missed spots in the peripheral field may be compatible with a normal functional binocular visual field. Any visual field defect which correlates with a known pathology cannot be regarded as a normal visual field. Unlike the situation that exists for exceptional cases to be considered for Group 1 licences, there are no exceptional cases allowed for Group 2 licences.

The evidence base for visual field testing and driving

There is ongoing research to establish the relevance of the size and location of a particular visual field defect to visual attention and road safety. There have been a few studies which demonstrate an increased accident risk with specific field defects, but there are others which do not show this.

Other methods of assessing visual performance whilst driving includes the Useful Field of View (UFOV) test. This is a static test that was developed to assess the relationship of cognitive function to reaction times. The test examines the visual attention within a central 30° area. It has not yet been validated as a test for DVLA purposes, but again, further research on this device is ongoing.

Visual field standards may change as a result of this research and the Royal College of Ophthalmologists will update its members if any such change occurs.

4 Other Conditions affecting Driving

a) Diplopia

Diplopia at extremes of gaze is not of functional importance as head posture will compensate for the double vision. Diplopia occurring in the primary position of gaze is a relevant disability unless it is completely corrected by prisms, botulinum toxin or occlusion. If treated by occlusion, the good eye must be able to satisfy the number plate and field standards and the patient have had a period of time to adjust to the state of monocularity. Some patients with longstanding diplopia are able to ignore the double vision. Such patients should be allowed to hold a licence following confirmation of their ability from a consultant ophthalmologist. With
group 2 drivers, uncontrolled diplopia will preclude licensing. As monocularity is not allowed for Group 2 driving, occlusion is not an option for treatment.

b) **Retinitis Pigmentosa and related disorders**

These conditions may cause progressive constriction of the peripheral visual field and defective vision under poor illumination as well as poor adaptation to changes in intensity of illumination. Minor degrees of night blindness can be tolerated for Group 1 driving if the number plate and visual field standards can be satisfied. The higher visual standards required would probably debar these patients from Group 2 driving. In some cases, the visual field defect is localised and non-progressive. Further information regarding the condition will be sought from the consultant ophthalmologist by the DVLA in these situations.

c) **Colour Blindness**

Colour blindness is not an impediment to either Group 1 or Group 2 driving

d) **Blepharospasm**

This can be treated by botulinum toxin injections but the condition should be notified to the DVLA if it is extreme and affecting both eyes. Both Group 1 and Group 2 drivers can be allowed to continue driving, subject to satisfactory medical reports.

e) **Partial sight registration**

Patients who are registered as being partially sighted are regarded as unsafe to drive. They should consequently be advised to inform the DVLA of their condition.

5 **Medico-legal considerations**

The DVLA has the responsibility for deciding whether any individual patient is fit to hold a driving licence. The onus is on the licence holder to declare to the DVLA if they develop a medical problem which affects their fitness to drive. Ophthalmologists may be asked to provide appropriate reports for the DVLA but in general they will not be required to express an opinion as to the patient's fitness to drive.

All doctors owe their patients a duty of confidentiality and this is enforced by the General Medical Council. When an ophthalmologist feels that their patient does not fulfil the visual standards for driving it is important that this feeling is made known to the patient at the time. In addition it is advisable for an entry to this effect to be made in the hospital notes and the general practitioner informed by letter. The patient should then be advised to notify the DVLA him or herself. If the patient then continues to drive or does not notify the DVLA he or she should be challenged by the ophthalmologist, and where appropriate, advised that the ophthalmologist will inform the DVLA directly. In these rare cases, the DVLA will treat this as strictly confidential and the source of the notification will not be released.
Ophthalmologists should only breach confidentiality in good faith and where the patient's vision is likely to make them a danger to themselves or others if they drive. Members of a defence organisation are recommended to discuss such cases with a medico-legal adviser in advance. The patient's general practitioner should also be informed.

Useful References


Also see the DVLA website on http://www.dvla.gov.uk

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