



# Look sharp! How to keep at-work drivers sharp-eyed and safe on the roads

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## Introduction

Good eyesight is a basic requirement for safe driving. Poor vision increases the risk of collisions by reducing a driver's ability to recognise and react to a hazard or the behaviour of other road users.

This report outlines ways in which employers can address and mitigate the risk of poor driver eyesight for all at-work drivers, and help to keep their employees sharp-eyed and safe on the roads. The report is based on presentations given at a webinar for fleet managers that covered effective strategies to combat the risk of poor driver eyesight. Speakers included optometrists, academics and a road-risk consultant, who provided a case study of a fleet operator that has implemented comprehensive policies and procedures to mitigate driver risk, of which eye-test screening forms a key element.

The webinar was recorded in the UK, but the content of this report will be relevant for fleet operators based anywhere in the world.



## Vision and health

By Rebekka Heitmar

There are a range of common age- and disease-related disorders that can affect the vision and the safety of an at-work driver. The most common disorders are outlined here.

### Age-related vision disorders

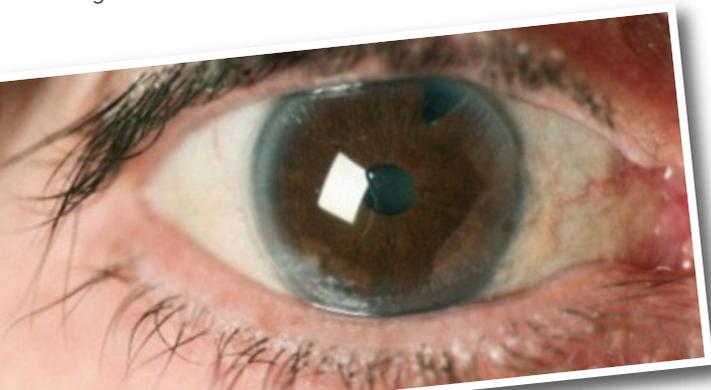
**Age-related macular degeneration (AMD)** is a disease associated with aging that gradually destroys central vision, which is needed for seeing objects clearly in small detail, and for daily tasks such as reading and driving, including viewing dashboard controls.

There are two forms of AMD:

- **Wet AMD** (also referred to as advanced AMD): Vision loss can occur rapidly; an early symptom of this condition is that straight lines appear to be wavy.
- **Dry AMD**: Affects the central vision in the affected eye, which gradually blurs. People with dry AMD may find it difficult to recognise faces, and may need more light for close-up tasks such as reading. They may also complain of straight lines not appearing straight any more, or that small parts of their central vision are missing; however, this will depend on the size of the lesion and whether or not both eyes are affected.

**Cataract** is a clouding of the lens in the eye, resulting in vision that is hazy and lacking in detail. Symptoms include blurred vision, faded colours, a halo or glare around headlights, poor night vision, and double vision or multiple images in one eye. Cataracts can develop as part of normal aging; however, in patients with diabetes they often develop earlier in life. In some rare cases, cataracts can develop as a side effect of medication being taken to treat other health issues.

**Glaucoma** refers to a group of eye conditions in which the optic nerve is damaged, resulting in misty and patchy vision. Once damage has occurred, it cannot be reversed. The only way to know if you have glaucoma is to have regular eye tests. The World Health Organization (WHO) estimates that, globally, 4.5 million people have suffered serious sight loss as a result of glaucoma, accounting for more than 12% of global blindness.<sup>1</sup>



### Signs that you may have a vision disorder:

- straight lines appear to be wavy
- blurred vision
- difficulty recognising faces
- colours appear faded
- 'halo' around headlights
- poor night vision
- double vision
- misty or patchy vision
- colour vision disturbances
- needing more light for reading

### Disease-related vision disorders

**Diabetes mellitus (Type I and Type II)** is estimated to affect over 400 million people worldwide. Diabetic retinopathy is the most common cause of vision loss among people with diabetes and can lead to blurred vision and blindness. Vision loss from diabetes is largely preventable, and early detection and treatment can significantly reduce the risk of blindness.

**Hypertension (high blood pressure)** is a long-term medical condition that can affect eyesight. Other symptoms of hypertension that can affect driving are fatigue, confusion and the increased risk of a stroke. It can also lead to more serious cardiovascular events, such as stroke and heart attacks (see below).

**Cardiovascular disease (heart disease)** can cause abnormalities including colour vision disturbances, cataracts and glaucoma, and can lead to vision loss due to changes in the blood supply to the eye. Cardiovascular disease also increases the risk of strokes, which can cause patients to lose parts of their visual field.

**Sleep apnoea** is a concern for fleet drivers, as it causes poor sleep quality, fatigue and low energy levels, and can lead to people 'nodding off' during the day. Individuals suffering from sleep apnoea have a higher risk of developing glaucoma.

### Other factors affecting vision

**Hyperopia** (far-sightedness) means that drivers have 'normal' distance vision, but difficulties with close-up reading, such as dashboard controls.

**Myopia** (short-sightedness) means that drivers have good close-up vision, but cannot see distant objects as clearly. Wearing glasses can be an issue for some drivers. High-index lenses can create haloes and coloured fringes around light sources. These can be reduced by an anti-reflective coating. Varifocals can cause visual distortions



and problems with side and rear-view mirrors, requiring the driver to make greater head movements. The latest developments in optical technology include lenses that are designed specifically to make driving more comfortable – and safer.

**Health and lifestyle:** obesity, smoking, alcohol, lack of exercise, poor diet, stress and family history can all increase your risk of developing a vision disorder. Improved diet and lifestyle can help to prevent vision problems, and lessen their impact if diagnosed.

Fleet managers should encourage drivers in their fleet to keep their eyes as healthy as possible – and therefore reduce the likelihood of developing vision disorders – by informing them of risk factors; encouraging them to have regular health checks; advising them to stop smoking; and, if possible, arranging free health checks for their drivers.

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**Vision, driving and road safety**

By Julie-Anne Little

**Global vision standards**

Countries across the globe that use vision-based driving standards commonly measure visual acuity and visual fields to determine if a driver is safe at the wheel, and there are different requirements for different modes of transport. Drivers responsible for large trucks and passenger transport are typically held to a higher standard than car drivers or motorcyclists. Generally speaking, this is because they spend more time driving for work, but there are many car drivers and motorcyclists whose work requires them to spend just as long on the road, yet they are held to less exacting standards.<sup>3</sup>

For example, vision standards in the UK require Group 1 drivers (cars and motorcycles) to have a minimum binocular visual acuity of at least 0.5 (6/12 Snellen equivalent) in at least one eye and a visual field extending to 120 degrees in the horizontal meridian. In contrast, Group 2 drivers (HGVs and passenger transport) must have binocular visual acuity of at least 0.8 (6/7.5 Snellen) in their better eye, and visual acuity of at least 0.1 (6/60 Snellen) in the other eye, plus a visual field extending to 160 degrees in the horizontal meridian.<sup>4</sup>

Binocular visual acuity of at least 0.5 (6/12 Snellen) is a common criterion for international vision standards. Studies suggest it is the most widely used figure,<sup>5</sup> required in France, Spain, numerous states in Australia (Western Australia and Victoria) and the USA (Iowa and New York City). Some countries have stricter vision standards, including Germany and Italy, which both require drivers to have binocular visual acuity of at least 1.0 to hold a driving licence.<sup>6</sup>

**Roadside testing and Cassie's Law**

In 2011, British teenager Cassie McCord was killed by an 87-year-old who had failed a roadside eye-sight test. Following Cassie's death, the UK government introduced legislation that gave the police the power to ask the Driver and Vehicles Licensing Agency (DVLA) to immediately revoke a person's driving licence if they suspect that the driver's vision is impaired. Between 2013 and 2016, the DVLA revoked the licences of 1,034 drivers who failed the roadside eyesight test.<sup>2</sup>

**Take care of your eyes and save lives**

By Jay Ghadiali

Good vision is vital on the roads and regular eye tests are the best way to screen for any potential concerns. Many vision disorders can be corrected and/or improved by wearing glasses or contact lenses.

It is the responsibility of every driver to safeguard their driving licence and protect other road users by taking care of their eye health. Fleet managers have a duty of care to educate other drivers in good eye-health practices.



## Visual acuity

Measuring visual acuity is an established way of determining visual function and is widely used across the world. Although we have a clear understanding of what visual acuity is, there are a range of tests used to measure it.

In the UK, for example, novice drivers take the 'number plate test', where they are asked to read a number plate from a distance of approximately 20 metres. The test is a simple way for examiners to test visual acuity during the driving test, and is also used by the police for roadside assessments.<sup>7</sup> Aside from the number plate test, often taken at the age of 17, there is no further official assessment of a driver's vision, unless the driver declares a problem with their eyesight.

Other countries (e.g. the Republic of Ireland, Australia, Germany and some states in the USA) require drivers to undergo a visual acuity test with an eye-care professional before a driving licence can be issued. Different countries have different requirements for whether sight testing should take place before, during or after the driving test.<sup>8</sup>



## Visual field

Visual field is the degree of visual angle that you can see at any one time. Most people pay attention mainly to the centre of that field of view, but they will have an awareness across the field and will be able to sense movement in their peripheral vision.

In Germany and the UK, for car drivers and motorbike riders, the minimum visual field necessary to drive is 120 degrees horizontally. In the USA, state legislature differs greatly, but in New York City and Iowa the visual field must be 140 degrees or higher. Other countries (e.g. Italy and Spain) do not have a legally required field of vision.<sup>9</sup>

There are various tests available for analysing visual field but generally self-reporting is relied on.

## Contrast sensitivity, glare and twilight vision

Driving requires more than just good visual acuity and field of vision. Some driving conditions affect a driver's vision and can be particularly challenging. These include night driving, and driving in adverse weather conditions, such as bright sunlight and pouring rain.

In northern latitudes, people tend to spend a lot more time driving at night or in low-light conditions, which often coincides with times of peak traffic. In contrast, studies show that in countries closer to the equator, a higher proportion of people experience visibility problems because of the glare from the sun.<sup>10</sup> However, winter sun in northern latitudes is low in the sky, so can also be visually disabling as the sun is close to the driver's field of vision on a sunny winter's day. There is no standardised or established test for these conditions, so we have no sense of what levels of visual function make a safe driver.

Some countries, for example the Republic of Ireland, have legislation that requires assessment of contrast sensitivity, glare and twilight vision. These can be measured as part of a professional eye examination.

“ Some driving conditions affect a driver's vision and can be particularly challenging. These include night driving, and driving in adverse weather conditions, such as bright sunlight and pouring rain. ”



**Case study: Aligning vision standards in the European Union**

In the early 2000s the European Commission (EC) undertook a review of driver licensing standards in individual European countries. This culminated in 2009 in an update of the EC directives on driving licences, with member countries required to align their national standards to the directive by 2013, and set out minimum requirements to ensure that drivers met a 'safe' visual standard for driving.

In the European Union, over 440 million people (60%) hold a driving licence.<sup>11</sup> With free movement between countries, vision standards for driving need to be EU-wide.

Recently, a European Council of Optometry and Optics (ECOO) report<sup>12</sup> investigated whether the aims of the EC directive to harmonise vision standards across European countries had been achieved, and found that:

- there continues to be a large variation in how visual standards are interpreted and implemented; and
- some countries require visual and other medical standards to be measured 'in person' for a driver, while others rely on self-reporting.

Measures of visual function conducted at the time of licence acquisition in EU countries range from the very basic self-test of being able to read a number plate at a set distance, to more comprehensive measures of visual acuity, visual field, twilight vision and colour vision.

**Vision and driving: the risks**

People tend to be poor judges of their own vision, and research also indicates that in the UK, for example, drivers have a poor understanding of the number-plate test.<sup>13</sup> Uncorrected refractive error (need for glasses) is common and yet not everyone who needs glasses has them. In a survey carried out by Brake, 12% of respondents who require glasses or lenses for driving admitted to driving without them in the previous 12 months, while one in five (19%) drivers reported that they had delayed having an eye test even after noticing problems with their vision.<sup>14</sup>

Many vision changes caused by disease occur gradually and may not be noticed by a driver, especially if they are not receiving routine eye care. Common ocular diseases include cataracts, glaucoma, diabetes and age-related macular degeneration (see earlier).

The increasing number of older drivers in the population raises the following concerns:<sup>15</sup>

- visual acuity decreases with age;
- older drivers are more susceptible to cataracts, which reduce contrast sensitivity even in the early stages, making night-driving more difficult;
- age-induced changes in vision (e.g. difficulties measuring distance) can limit hazard perception and reduce reaction time as a result; and
- age increases the risk of ocular disease.

“Many vision changes caused by disease occur gradually and may not be noticed by a driver, especially if they are not receiving routine eye-care.”

**What can eye-care professionals do?**

Eye-care professionals can help to keep people driving safely and independently by giving good clinical advice and maximising vision through prescription eyewear and contact lenses. They can also help ensure that drivers are wearing glasses with correctly sized lenses.

**What can companies do?**

To ensure the safety of their employees and the public, employers can take the following simple measures:

- encourage regular eye examinations for all drivers;
- promote good eye-care habits using positive messaging (don't scare people away from getting their eyes tested);
- keep windscreens clean – ensure that windscreen wipers are working well and that water bottles are topped up; and
- encourage good driving habits in general.

**AUTHOR**

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## Driver eye testing:

### Proactive eye-test screening as part of the duty-of-care driver risk-assessment process

By Nigel Lawrence

#### Driving at work: a 'high risk' environment

Driving at work is the most dangerous activity that employers require their employees to undertake on behalf of an organisation. In many high-income countries, employers have a legal requirement to take all reasonable steps to protect the safety of their staff.

In the UK, for example, these obligations include:

- fulfilling clearly defined duty-of-care and Health & Safety at Work requirements;
- a requirement to undertake a risk assessment of all driving employees and then mitigate identified risks to the employee and to the general public; and
- regular eye-test screening (part of the risk-assessment process).

The penalty for any UK organisation failing to fulfil these legal obligations was recently increased to 10% of its annual turnover.

However, this legal protection is often limited or non-existent in many low- or middle-income countries, placing at-work drivers at risk.

Fleet managers must understand the risks facing their employees and adapt their policies accordingly. Protecting the safety of employees who drive on business is both a legal requirement and an obviously beneficial activity for any organisation. A vital aspect of this protection is a robust risk-assessment process, of which eye-test screening forms a key element. Nothing is more important than the safety of your staff.

#### AUTHOR

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#### Case study: Applied Driving Techniques & Ashfield Healthcare

Applied Driving Techniques (ADT) provides award-winning road-risk and driver-incident reduction consultancy services. It audits fleet risk and manages risk reduction for companies across the globe, working with clients to ensure that they are operating within the law; that they are fulfilling their duty of care; and that their fleet is managed with minimum risk and maximum cost efficiency.

Ashfield Healthcare (part of the Global UDG Group) is an international healthcare services provider, providing services to support the pharmaceutical industry and healthcare professionals. It works with the top 20 global pharmaceutical companies, and has around 6,000 employees worldwide, of whom 1,400 are at-work drivers. ADT administers a fully managed duty-of-care driver risk-management solution for Ashfield Healthcare.

#### How has Ashfield Healthcare approached eye-test screening?

Ashfield Healthcare has ensured that its driver safety policy and handbooks:

- are based on a very clear understanding of the importance of eye care and having regular eye tests;
- are based on a very clear understanding of internal procedures regarding eye health, e.g. where an employee can find their free eye-test voucher, how to use it, etc.; and
- contain very clear guidance to employees.

An online risk-assessment process (which also provides an important audit trail if a crash does occur) is undertaken annually with all drivers as part of ADT's service. As part of the process, drivers are asked when they last had an eye test.

The risk-assessment process includes screening to verify that the driver has undertaken the necessary eye test in the last two years (along with other medical and driving and vehicle-related risks).

There is a clear notification process for employees who have not had an eye test in the last two years:

- ADT informs Ashfield Healthcare's fleet department via its scheduled reporting method; and
- Ashfield's fleet department emails the employee, detailing the importance of having an eye test with reference to the driver safety policy.

## Look sharp and take action

There are a number of simple measures that drivers and fleet managers can take to reduce the risk of poor driver eyesight.

### Drivers

As a driver, you can pledge to:

- Have regular eye tests with a registered eye-care professional, at least every two years
- Report any visual disturbances to your line manager
- Always wear your glasses or contact lenses if you need to while driving
- Keep windscreens clean – check that windscreen wipers work well, and keep washer fluid topped up

A healthy lifestyle will reduce your likelihood of developing some vision disorders.

### Fleet managers

Fleet managers should:

- Arrange free health checks for all drivers
- Encourage drivers to undergo regular eye tests with an eye-care professional
- Offer free or subsidised eye-tests to employees
- Educate employees about good eye health practices; send regular e-bulletins and offer training workshops to share information and advice
- Make staff aware that if they need to wear glasses or contact lenses for driving, they must do so at all times
- Communicate company policy on eye health to all employees
- Undertake a risk assessment of all driving employees and take action to reduce any risks to employees and other road users that are identified
- Run targeted interventions to remind drivers when their eye tests are due
- Encourage good driving habits among employees.



## About Global Fleet Champions

Global Fleet Champions is a not-for-profit global campaign to prevent crashes and reduce pollution caused by vehicles used for work purposes.



Global Fleet Champions is a partnership initiative administered by Brake, the road safety charity. Sign up now and become a fleet champion for safety and sustainability.

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## About Vision Express

# vision express

Vision Express is the third largest optical retailer in the UK and part of GrandVision, the global optical retailer, operating across 44 countries and spanning 6,100 stores and online. Its remit is to deliver superior, high-quality and affordable eye care to people around the world, and set up best practice in clinical standards.

Vision Express works with organisations such as the Glaucoma Society, the Stroke Association and the Macular Society to help raise awareness of the importance of regular eye tests, and to use their joint expertise to train optometrists.

## End notes

- 1 WHO, Priority eye diseases: Glaucoma, 2017
- 2 Parliamentary question asked by Mrs Cheryl Gillian (Chesham and Amersham) and answered by Andrew Jones MP on behalf of the Department for Transport 22 November 2016, Parliamentary Hansard
- 3 Bron, A.M., et al., International vision requirements for driver licencing and disability pensions: using a milestone approach in characterisation of progressive eye disease, NCBI, 2010
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- 10 Khumalo, N.V., et al., Visibility improvements through information provision regarding sun glare: a case study in Cape Town, 2017
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- 15 ECOC, Visual Standards for Driving in Europe: A consensus paper, 2017

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