

Driving & Spectacle Lenses

Webinar Q&A responses by Carlos Muñoz Marín and Eva Chamorro

Are vistamesh type lenses very effective?

According to the information provided by the official website, this type of lenses can improve the vision at night by the reduction of the scattering light reflection and increasing the contrast.

As a professional how can you overcome a patient who refuses correction if their VA does not meet driving standards and in what way can you reinforce this to the patient?

The GOC have published new guidance on disclosing confidential information, which is to be used in conjunction with the Standards of Practice. The guidance and an associated flowchart 'What to do if a patient's vision may not be fit to drive' is available at: <https://standards.optical.org/disclosing-confidential-information/> The GOC Standards of Practice are available at: <https://standards.optical.org/the-standards/optometrists-and-dispensing-opticians/>

Can we get some information about tints recommended for driving?

Yes, of course. [Click here for more information.](#)

Do light conditions exist low enough in normal night driving great enough to trigger more than 1.00D of accommodation/ night myopia? If so, would you recommend some illumination within the car, if this were suspected?

According to several researches one in three persons has night myopia, this myopic shift has been reported to be as high as 3.0 to 4.0 diopters but has an average magnitude of 0.27D. To travel with interior lights on at night while actively driving can be hazardous, for that reason it is not recommended.

Do different car head light types affect recovery times?

There are several types of headlights, the main are: halogen, LEDs, and xenon lights. Xenon lights are characterized by their uncontrolled brightness, which often causes glare for other drivers, and the time they take to reach full brightness. Halogen lights are better than xenon lights but are characterised by be more dimmer an inefficient than LEDs causing a worse illumination on the road and dispersing the light in more direction than LEDs, for this reason LEDs should work much better in terms of efficiency and light dispersion, because of light from LED is the most directional, the brightness is reduced and therefore the recovery time after a dazzle is reduced.

How does the pupil size compensation work? Bearing in mind the varying brightness of headlights?

The compensation is made by using a special progression profile. The inMotion progression profile incorporates an extra negative power (up to 0.25 D) to partially reduce the effects of night myopia. This creates a night vision zone on top of the lens that improves the driver's visual quality, mainly for far distances. This unique zone provides better focus of distance objects on the road, thus reducing visual fatigue while driving at night.

Should drivers allow their eyes to adapt to the darkness before driving at night to be safer?

It is not necessary; the best way to be safer driving at night is using the correct glasses for that task and have a good maintenance and cleaning of the headlights, mirrors, dashboard, and windscreens.

How do MAR coated lenses help when momentarily blinded by headlights for instance?

MAR coatings eliminate annoying reflections from night-time lights, among others, reducing considerable the glare and momentarily blinded from night-time lights and headlights.

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Should we be sharing our knowledge with car manufacturers to help them design car headlights that provide optimal illumination without destroying a driver's night vision?

Yes of course. It is very important to reach a compromise between amount of illumination and dazzle. It is important to ensure light illumination is correctly directed, in order to avoid glare and discomfort.

With the negative boost above the fitting cross would the patient need to dip the head to benefit from this whilst night driving

The wearer will lower their chin slightly to use the area of the lens that is most optimized for night lighting conditions. The patient will tend to use this area of the lens at night without the need of informing in advance.

Many patients have commented negatively on the introduction of LED headlights-some with up to 12000LM - what lens coatings or type of lens do you recommend?

LEDs peak of emission is between 430-450nm, according to this information, the best solution would be a multi-layer coating which its absorption peak is close to that range of wavelengths. IOT inMotion coating peaks at 405±10 nm, but light from 430-450nm is mostly absorbed.

Over the last decade lots of my patients, complain about modern car headlights causing painful disabling glare, which is not alleviated by any lens design or coatings.

It is true that modern headlights improve the illumination for the driver but produce glare for the rest of drivers. Driving lenses improve the night visual acuity in general, so the comfort will be greater than with standard lenses. Considering coatings, modern headlights are commonly LED type, which peak emission is between 430-450nm. IOT inMotion coating peaks at 405±10 nm, but light from 430-450nm is mostly absorbed.

Does the driver need to drop their chin to find night-driving zone in lens?

Q10 - The wearer will lower their chin slightly to use the area of the lens that is most optimized for night lighting conditions. The patient will tend to use this area of the lens at night without the need of informing in advance.

Of the different driving lenses available, which is the most effective in reducing glare and giving better night-time performance?

To verify the effectiveness of all lenses and evaluate which ones offer better performance, it would be necessary to carry out a technical comparative study together with a trial with real patients.

If I understood correctly, 30% of people over 55 do not drive at night / bad weather because they do not feel confident. Was this mostly because of vision? When they had a more adapted lens, how did the results change?

Yes, most of them do not feel confident because the vision. It is known that visual acuity and accommodation ability decrease with aging, causing discomfort and loss of confidence. This fact limits our acts, producing that people over 55 avoid some activities because the insecurity they feel when doing the task.

A better adaptation directly influences our feeling of confidence and comfort, so it will be translated into a decrease in the limits we impose on ourselves, and therefore people over 55 will carry out activities for which they previously did not feel confident enough.

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Is it your brand ONLY of driving varifocals that are not suitable as sunglasses? (I am thinking of Zeiss Drivesafe), as I have done quite a few Drivesafe sunnies as have been advised by reps that it's OK?
IOT lens design could be offered with sunglasses and would surely offer good performance. However, when combined in this way, it would lose the effect of correcting night myopia in the upper zone.

Progressive wearers can use the night myopia progressives but is there anything for single vision wearers?

InMotion lenses are also available in single vision.

The legal requirement to have a spare pair of glasses in the car does not exist in the UK. Do you think we should be lobbying for this?

Of course. It is completely necessary to lobbying for this. It is very common to forget the glasses or to have a minor accident. Therefore, to have a spare pair of glasses in the car is a good practice.

What about honeycomb lenses?

According to the information provided by the official website, this type of lenses can improve driving at night or in bad weather, reducing glare in bright light and night time driving conditions.

Whilst I fully support the good logic behind driving coatings, it is interesting to see that the coatings are widely available on lenses not ideal for driving. Perhaps you would like to comment.

Driving treatments significantly reduce distracting reflections from oncoming traffic or streetlights and reduce the feeling of glare. Prescribing this type of treatment in other balanced type progressive designs can be a good option for people who do not drive but feel safer or more comfortable in environments with high light pollution

Who manufacturers lenses with night myopia correction?

IOT currently collaborates with various manufacturers in the UK. In the following link you can consult the laboratory that is closest to your optical store: <https://www.abdo.org.uk/dashboard/ophthalmic-lens-availability-ola-online/find-compare-spectacle-lenses/iot/>

Who supplies IOT lenses?

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Why is it not suitable for sunglasses?

IOT lens design could be offered with sunglasses and would surely offer good performance. However, when combined in this way, it would lose the effect of correcting night myopia in the upper zone.

With drive safe varifocals, the reading is very poor would you suggest these are a second pair rather than main pair?

Each option has its advantages and disadvantages. When we prescribe a driving lens for general use we have to be sure that it is the ideal patient (patient that spend many time on the road, taxi drivers, etc.)

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With occupational drive lenses are there specific measurements required due to there only being two power zones?

It is advisable. The more real data we have, the better the result and customer satisfaction will be. Especially when we use wrapping frames or very high prescriptions

With yellow tint, is there no loss of perception and some after driving effects?

When people wear the yellow tint, they are adapted to a situation of less light and when the glasses with the yellow tint are removed, they can perceive a greater brightness in the images, but it disappears quickly

Should drivers wear a yellow contrast-enhancing tint at night? Many older Px swear they make their VA better.

The use of yellow tint with anti-reflective treatment improves the mesopic contrast sensitivity of varifocal users. This tint can be beneficial during night driving and in those subjects with special requirements for their profession.

Would a VA need to be recorded for the upper are of this lens?

It is not necessary for the optician to record this patient measurement. In our clinical trial, we measured mesopic visual acuity after 15-minute darkness adaptation in low lighting conditions (the luminance on the subject's eye was 1cd/m^2). It was measured when the patient was wearing their best-corrected prescription and when inducing a negative defocus of -0.25D .

We observed that when a -0.25D lens was placed in front of the eye $2/3$ of patients did not change their visual acuity and the other $1/3$ of them experimented an improvement of the visual acuity. In no case did a -0.25D lens worsen the patient's mesopic visual acuity.

Are there any effective ways to show the patients the advantages of driving lenses in practice?

To show the patient the benefits of the lens, a -0.25D lens with the InMotion treatment could be placed in front of the eye after having been adapted to darkness for 15 minutes. Then, the user can be asked in which situation they feel most comfortable in a dark environment with the -0.25D lens and InMotion treatment or without lens.

Are your lens designs used by lenstec / Rawdon optical?

In this case, we prefer that you contact directly to Lenstec / Rawdon Optical.

Carlos/ Eva, Do you foresee a driving lens as a mandatory requirement or will driverless cars win that race? Perhaps you would like to comment.

We think that a night driving lens will not be mandatory in the future since, although it improves people's visual conditions significantly, a normal progressive lens without special treatments may be sufficient for driving at night. The person will decide what type of lens to wear freely. The idea of driverless cars will take a few more years.

Does Essilor Previncia do the same effect as a drivesafe coating?

They are probably not treatments with the same characteristics.

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Have there been any tints proven to enhance the contrast driving in the daytime?

Treatments that absorb or reflect blue light (short wavelengths) are the best choices among for outdoor activities such as driving. Individuals report a subjective increase in both the brightness and contrast of visual stimuli with yellow treatments.

For instance, light scatter (which is greater for short than for longer wavelengths) is reduced by yellow filters, suggesting that yellow filters should mitigate visual effects of scatter such as reduced contrast sensitivity. Others have noted that yellow filters reduce chromatic aberration. It has also been reported that pupil dilation in the presence of a yellow filter is greater than that with a matched neutral density filter, which might partly explain the perceived improvement in brightness that some individuals report.

Luque J, Capilla P, Diez MA, Felipe A. Effect of a yellow filter on brightness evaluated by asymmetric matching: Measurements and predictions. J Opt A: Pure Appl Opt. 2006; 8:398-408.

Kelley SA. Effect of yellow-tinted lenses on brightness. J Opt Soc Am. 1990;7(10):1905-1911.

If your own lens has night myopia control, does that mean it is not effective for daytime driving (effect being overplussed)?

IOT lens design could be offered with sunglasses and would surely offer good performance. However, when combined in this way, it would lose the effect of correcting night myopia in the upper zone.

Blue light research seems to indicate it is linked to improved macula health- should we be more proactive in our recommendations?

Several studies have shown that cumulative absorption of blue-violet radiation from electromagnetic spectrum by visual pigments (melanin, melanopsin, flavoproteins or lipofuscin) increases ROS (Reactive species oxygen) production, which in turn is related with the development of the AMD. However, the role of blue-violet light in the pathogenesis of AMD follows still controversial. Therefore, optometrist could be more proactive in their recommendation about blue-block filters unless it must be keep in main that its protective property is still controversial.

Do you think Car Manufacturers are in support of visual solutions or not?

Yes, I think car manufacturers consider vision while developing new launches, for example, car lights have been evolving from halogen and/or high intensity discharge (HID) headlights to LED but it would be better if Visual Science community share their knowledge about visual system with car manufacturers in order to improve drivers safety.

Have any trials been conducted on Px with poorly fitting spectacles & do you think this would contribute to their fitness to drive? Would they be more likely to cause an accident?

A poor frame and lens fitting adjustment will directly impact in visual quality of the drivers and this seems particularly pertinent to PPL lenses. In fact, ISO in Europe and ANSI in USA standard allows a fitting error no greater than 0.5mm in horizontal and 1mm in vertical.

In IOT trials we have conducted several trials with progressive lenses, and we could ensure that progressive lenses fitting is crucial for a successful adaptation, specially, at far vision.

One example of a clinical trial conducted on Px with poorly fitting spectacles it is presented below: Alderson AJ, Green A, Whitaker D, Scally AJ, Elliott DB. A Comparison of Spectacles Purchased Online and in UK Optometry Practice. Optom Vis Sci. 2016 Oct;93(10):1196-202. doi: 10.1097/OPX.0000000000000955. PMID: 27536974; PMCID: PMC5049952.

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PPL wearing drivers - should the fitting height be addressed to make the most of their VA?

Fitting height should not be addressed to make the most of PPL wearers drivers VA. The most important step of PPL adaptation for driving and to guarantee the maximum VA of the drivers is to perfectly fit the fitting cross of the lens with the patient pupil in order to the subject could use the far area of the lens without effort and/or without head movements. Also, it is important to order a PPL for driving or a balance PPL to ensure an enough far visual field.

Drive safe from Zeiss was the most popular lens dispensed - is that because it has been around the longest?

Zeiss was one of the first lens provider that have launched a design specialized for driving around the year 2016 so yes probably in one of the most popular because it has been around the longest. But nowadays, there are plenty options available in the market that are like Drive Safe:

- *Essilor Road Pilot II - Crizal Drive (Launched around 2017)*
- *Nikon SeeCoat Drive*
- *Rodenstock Road (Launched around 2016)*
- *BBGR Optical – Night Drive Boost*
- *Hoya EnRoute (Launched around 2017)*
- *Zeiss DriveSafe (Launched around 2016)*
- *IOT inMotion (Launched around 2018)*