

NOCTURNAL

ORTHO-K NIGHT LENS
overnight vision correction





NOCTURNAL™ Ortho-K night lenses provide your patients with freedom from glasses or contact lenses during the day.

Worn only when sleeping, NOCTURNAL™ night lenses gently reshape the cornea correcting short-sight.

Transforming lives by improving vision.

Scotlens are proud to partner



Introduction

Nocturnal™ Orthokeratology (Ortho-k) is the process of wearing a contact lens only when sleeping that corrects short-sight. Stable corrected vision is provided all day without the use of contact lenses or spectacles

Scott Brown, Clinical Director of Scotlens, along with his father Jack Brown before him, is an Optometrist who pioneered some of the earliest Ortho-K lenses that were brought to market. Indeed Scotlens was proud to boast the UK's first CE Ortho-K lens. A recognised UK specialist in Orthokeratology lenses, Nocturnal™ Ortho-k lenses have been the first lens choice for many Eye Care Providers since 2003. Their patients have been benefiting for greater eye comfort, the freedom of having "naturally good eyesight" and the potential of myopia control.

Whilst the Nocturnal™ lens design has remained unchanged since 2008, the fitting assessment and corneal measurement has been evolving so that Nocturnal™ lenses now have one of the highest first lens fit success rates in the industry. This is only possible with the unique Scotlens Lathe2i™ manufacturing process that we use to ensure we meet our ambition to always be the most accurately finished lens in the UK. As we finish our lenses to such a high standard, at the time of writing we are still the only UK specialist GP lens manufacturer who has no need to polish our lenses. Our aim is to be the recognised 'Rolls Royce' of the sector, to ensure we meet our **'Best quality | Best fit | Best result'** target every time.

Nocturnal™ providers not only know that they are providing the best contact lens care for their patients but also see their patient numbers growing.

Patients increasingly find their eye becoming dry and uncomfortable at the end of a long day at the computer, only a contact lens that isn't worn in front of the PC can fix this... Nocturnal™.

Patients want the flexibility to swim at the gym or with their kids without worrying about lens contamination or loss, only a contact lens that isn't worn during the day can give total freedom... Nocturnal™.



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Terminology

As eye care professionals we need to use correct terminology, use medical terms and also communicate with patients appropriately.

“Astigmatism” is an example of this. A simple ametropia but patients consider it to be a rare condition. Orthokeratology is a similarly medical term that complicates patient communication. When talking to patients ‘Night lenses’ is the term that means patients will not dwell on the process and listen to the benefits and information you will provide.

Night lenses – contact lenses that you only wear during the night. They correct your eyesight when you sleep so you don’t need glasses or day lenses during the day.

Myopia – The preferable term for use with patients replacing short sight. This develops understanding that myopia is a condition that can lead to sight loss in older age. Similar to high blood pressure being a condition that leads to stroke or heart disease.

Myopia Control – The potential reduction in the amount of myopia that may develop as a result from an intervention such as time out of doors, night lenses, peripheral add soft day lenses (MiSight/NaturalVue) or spectacle lenses that incorporate special optics like Hoya DIMS.

Myopia Management- Similar to myopia control. Devices that provide myopia control effect are used in the context of a practice that offers myopia management utilising advice and multiple devices.

20/happy – Night lenses may leave some residual prescription. Patients may still find their vision to be perfect for their needs.

Jessen (Compression) – The additional amount of correction over the target myopia. -1.00DS as standard.

OR Specs – spectacles with residual prescription may be useful for high correction, astigmatism or to remove monovision affect.

BVS – Best vision sphere.

TzZ – Treatment Zone, the area of correction created on the cornea as a result of lens wear.

Lens Design

Nocturnal lenses are custom made to your specific topography or individual patient measurements. The design has been optimised since 2003 to give successful results. The design can be customised to your specifications away from the standard parameters.

Standard Parameters

BOZD	6.50mm 6.00mm 5.50mm	Patient Rx	≤ -4.50 -4.75 to -5.50 >-5.75
Diameter	11.00mm 10.50mm	HVID	≥11.20mm <11.20mm
Compression (Jessen)			1.00

OPTIC ZONE

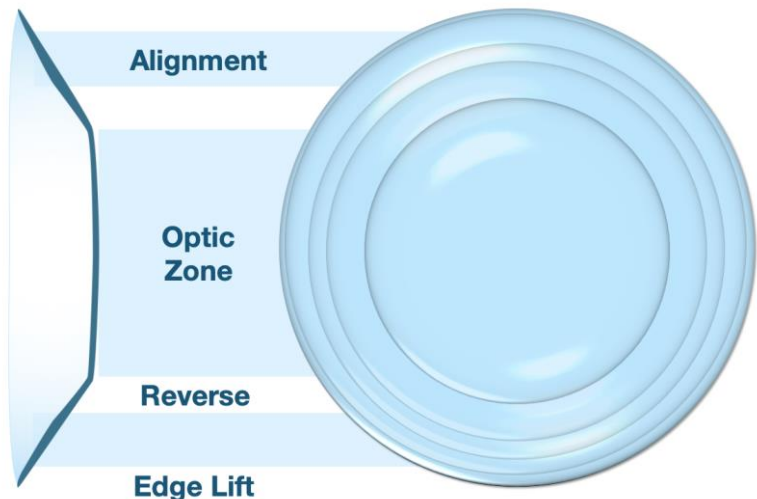
The optic zone controls the myopic correction. The standard diameters optimise subjective quality of vision but this diameter and Jessen factor can be customised.

REVERSE CURVE

This zone sets the sag of the lens and can be spherical or toric. This curve can be adjusted in 0.01 increments giving ability to optimise correction independent to fitting controlled by the alignment curves or the optical correction from the optic zone.

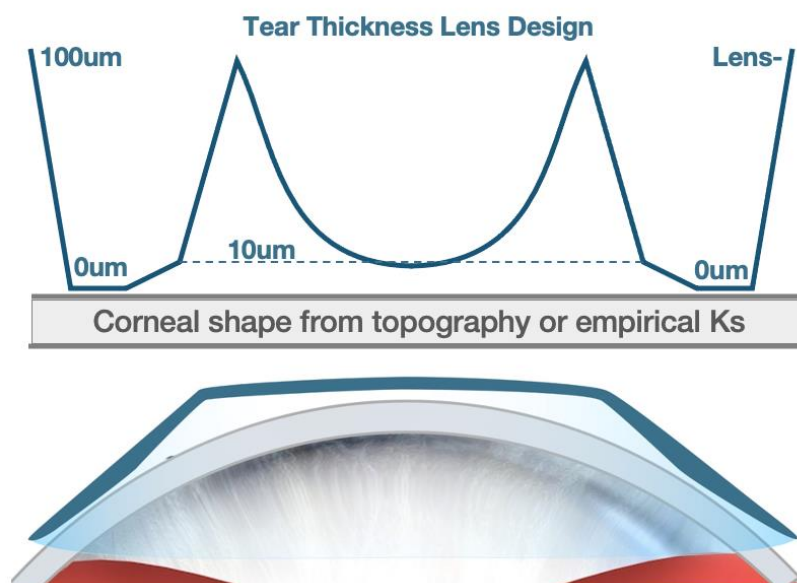
ALIGNMENT CURVES

This zone can be spherical or toric depending on the requirement. Optimum alignment optimised the correction of the Nocturnal lenses.

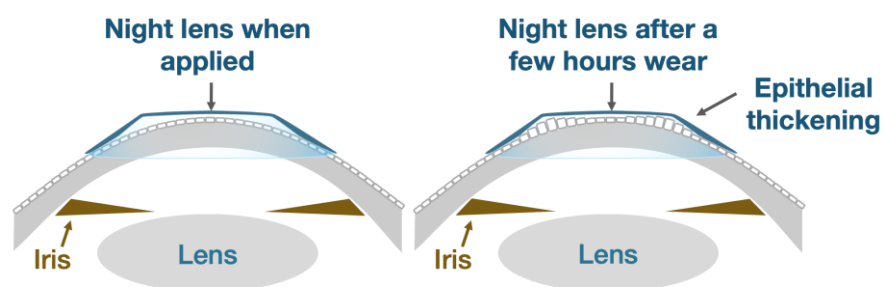


Lens Design

Nocturnal lenses are custom made to fit based on the corneal curvature from topography or keratometry. The lens parameters are designed to give alignment in the corneal mid periphery with apical clearance fit.



This tear thickness controls the build up up the corneal epithelial cells resulting in reduction of myopia.



Astigmatism is caused by the shape of the corneal stroma. Because only the epithelium changes in thickness residual corneal astigmatism will remain. The refractive outcome can be anticipated by showing the patient the BVS correction in a trial frame or with spherical soft day lenses.



Patient Assessment

Pre-Fitting Assessment

Myopia (BVS):	-5.00 Full correction expected >-5.00 OR specs may be needed for full VA
Astigmatism:	<-1.00 >-1.00 OR specs may be needed for full VA
Ocular Exam:	No ectasia, recurrent erosions, infection or inflammation
Topography:	Exclude ectasia Assess for decentred apex HVID Lambda
Behaviour:	Sleeps > 5 hours per night Will comply with lens handling and care

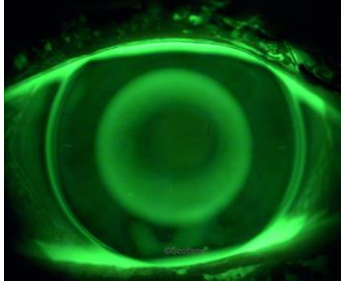
Ordering - Supply to lab@scotlens.com

Target myopic correction

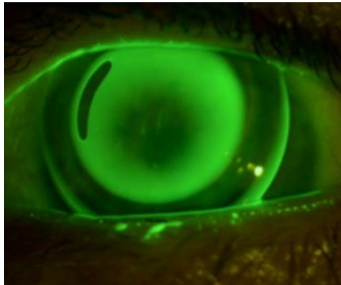
Exported topography or

Ks with mean e or Ks (default e=0.45)

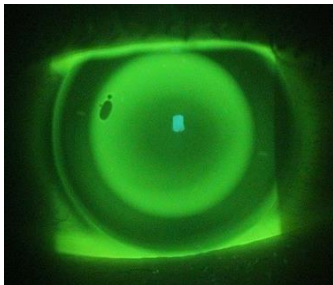
Collection Appointment



Optimum open eye appearance



Trapped bubble may result in dimple veil



Apical clearance,
often not representative
of result from
closed eye wear

Ensure you have the custom made Nocturnal lenses, care solution and case, insertion drop and handling solid sucker.

Use topical anaesthetic to help the patient learn handling without any distraction from lens awareness. They will adapt to the lenses with wear. Using anaesthetic gives them the knowledge the lenses will become comfortable. Studies with GP lenses have shown if anaesthetic is not used for initial collection drop out rates can go from *1 in 20* to *1 in 5*.

Once application and removal have been learned by the patient perform slit lamp assessment with fluorescein.

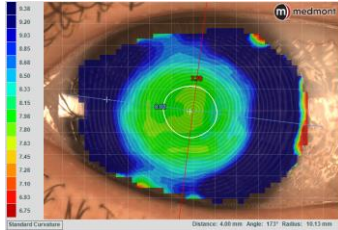
The fluorescein assessment is NOT a good indication of lens fit. Topography will reveal the accurate fit behind the closed eye lid. This assessment can confirm-

- Lenses can be applied without trapping a large bubble
- Alignment is present around the mid-peripheral cornea
- Acceptable corneal coverage and edge lift

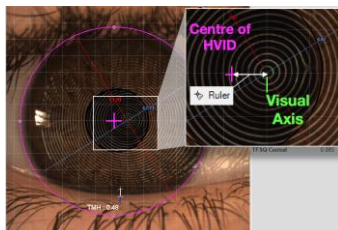
Visual acuity with the lenses should be corrected well for distance acuity. If the lens decentres in the open eye the irregular tear lens can cause unexpected acuity. This does not affect the anticipated correction from the lens.

Schedule an after care appointment for the patient following wear.

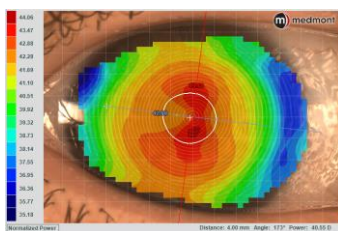
Pre-wear Topography



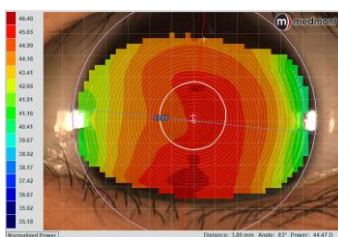
Screen for ectasia with *Tangential* with *Standard* scale



Lambda measured with ruler function



Axial with Normalized scale showing symmetrical cornea



Inferior steepening, TxZ will usually position toward steeper area

The placido image and the topography can provide accurate information that can help us understand factors that may limit the success of the patient.

Ensure a good quality pre-Tx capture with the patient fixating centrally and lids wide apart.

Initial screening to identify contraindicated ectasia or highlight corneal/tear film irregularity is done with *Tangential* (*Curvature* (mm) or *Power* (D)). *Standard* scale from 6.75 – 9.40mm.

HVID - Lens diameter should be a minimum 0.2 smaller than HVID. If HVID is 11.20mm or below then specify a 10.50mm diameter.

Ks – Topography Ks are very accurate. As Nocturnal lenses are custom made to suit the cornea the K value is not too significant. As a general rule higher corrections are more achievable with steeper K values.

e – Measured between 7.5 and 8.0mm chord. Using the average e value between flat and steep meridians is a good approximation for topographers that can't export maps or for empirical lens design.

Height- Measured between 7.5 and 8.0mm. Between meridians a difference of 20um will indicate a toric Nocturnal will provide a better fit.

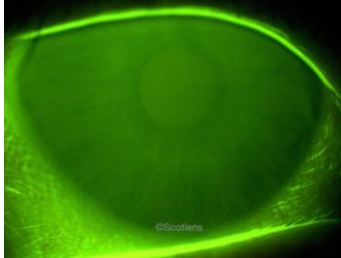
Lambda – It is common for the visual axis to intersect the cornea nasal to the corneal centre. This results in the patient looking through the edge of the TxZ when the lens centres perfectly. Use ruler function to measure between fixation and the corneal centre. If the value is ≥ 0.8 mm it will reduce the quality of correction especially with high correction.

Mild corneal asymmetry – Lenses can position towards the corneal apex. Use *Refractive/Axial* with a *Normalized* scale to assess the detailed symmetry of the patient. Around 30% of patients will have some visible asymmetry. Symmetrical or inferior corneal apex have minimal affect on TxZ outcome. Lateral or high apex can reduce quality of vision especially with high correction.

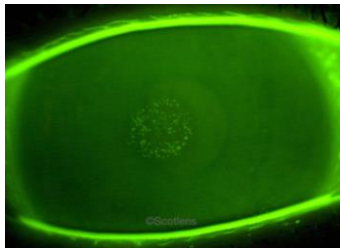
Corneas do not change significantly from childhood unless there is ectasia. The baseline maps will be referenced even after many years of lens wear. Ensure you get multiple good quality maps for each eye.

Topography video tutorials are available at scotlens.com/resources

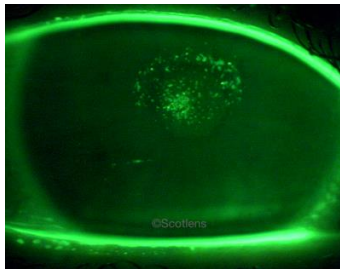
After Care Assessment



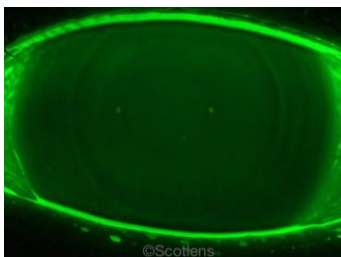
Normal result
no stain present



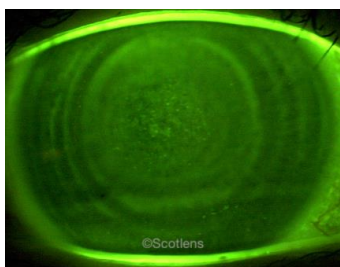
Apical punctate, grade 1



Apical lens touch, discontinue
order lens with 25um
more clearance



Mild lens imprint



Moderate lens imprint

Patients can remove lenses on waking but should bring to appointment.

Note the time lenses have been removed for.

Check vision with both eyes and individually.

Perform refraction. Note BVS preference as well as full Rx and acuities. (*Low corrections can achieve full correction after one night, higher correction will start the day fully corrected after a few nights wear. Full correction is achieved by 10 nights wear*)

Assess cornea and lids with fluorescein.

Assess topography

Review with patient and continue until next assessment.

Modifications to the lens correction or fitting should be done after 10 nights wear. Patients should wear the existing lens until a modified lens is supplied unless there is apical touch where discontinue wear until an altered lens is supplied.

After Care Schedule

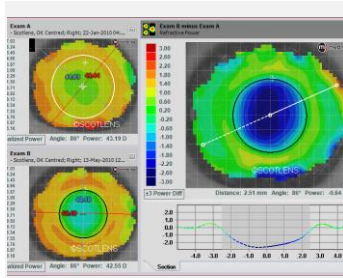
1 Night, 1 Week, 1 Month

After scheduled lens replacement

After Care Topography

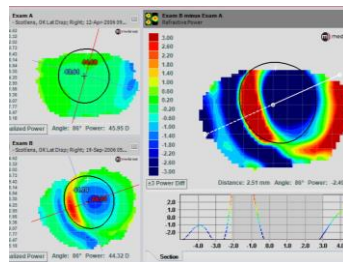
Use topography *Comparison* function from baseline map with current map. Refractive or Axial with the scale or set the scale to around the target myopia correction.

The topography shows the lens fit behind the closed lid. For record keeping “Bulls Eye,optimum”, “Temporal TxZ, acceptable” can be noted as alternative to open eye fluoresceine description.



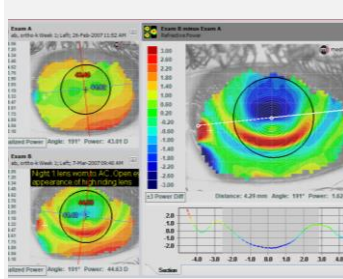
Bulls Eye: This is the optimum outcome showing central TxZ position. The TxZ smooth colour contours showing no irregularity in the TxZ.

Refractive error: Any correction will predictable incorporate with BOZR changes equal to the error.

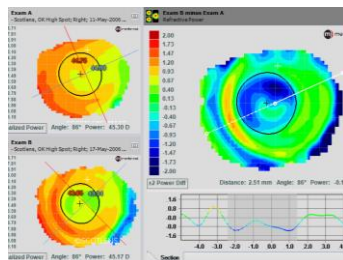


Lateral TxZ: This is most commonly due to Lambda where the lens is located central but the visual axis is nasal in the TxZ. This causes glare. Reducing the compression 0.75 and flattening the reverse zone 0.20 can sometimes improve vision quality.

If due to lens mis-fit steepen alignment 0.1 and reverse 0.1.



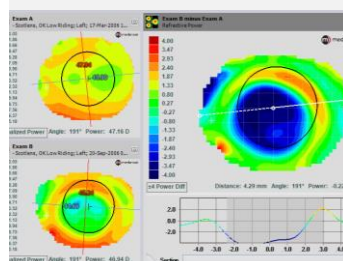
High TxZ (Smiley Face): The TxZ is located superiorly. The lens fit is usually flat in the vertical meridian. Order a toric lens with steep axis reverse 0.2, alignment 0.1 less than current flat axis values. Alternatively steepen the alignment 0.1mm if a no toricity is present (height difference at 8.0mm). **Refractive error:** This often results in an under-correction that will be rectified by adjusting the fit. This case was after night 1 and lenses were worn to the appointment. It became a Bulls Eye at the week 1 check without any alteration.



Central Island: In the absence of an corneal staining this is caused by too much gap between the cornea and lens apically. It will usually result in under-correction as the central cornea is still steep.

Flattening the reverse curve 0.2 will reduce the apical tear thickness.

NB: If apical corneal staining is also present then there is apical touch and the inflammation is causing the central island. In this case steepen the reverse 0.3.



Low TxZ (Frowney Face): This pattern causes the least visual disruption for patients. Possibly as we tend to look down commonly for visual tasks. It can also be a result of an inferior corneal apex. If this is the case incorporate any correction with BOZR changes.

A steep fitting lens can also cause a low TxZ. If this is suspected flatten alignment 0.1.

Lens Replacement & Care

Nocturnal lenses should be replaced on a minimum of an annual replacement.

After cares should be performed within a month after scheduled lens replacement to ensure the lenses are providing satisfactory correction.



Cleaning Solution: If patients are new to contact lens wear *Avizor GP Multi* is a good solution to start patients on. It can be used either on purpose or accidentally for lens insertion and provides good cleaning. Once a week cleaning inside of the lens with a cotton bud (5 spins one way, 5 the other) is good practice as finger tips struggle to rub in the lens. Poor cleaning can result in a drop off in vision so cleaning is not just for hygiene but maintains good vision and prevents intolerance. Alternatives to GP MPS solutions can be used, avoid thicker solutions as they bubble towards the end of the bottle and can increase frequency of dimple veil.



Avizor EverClean+ is a peroxide based solution that provides excellent cleaning without any rubbing needed and it is preservative free. This combined with *OcuDry* for insertion is the optimum combination. With new wearers accidental lens insertion with un-neutralised peroxide will cause temporary discomfort, hence starting them with *GP Multi*, but as with any MPS solution reactions can develop leading to poorer satisfaction for your patient and lost chair time. *EverClean+* not only provides excellent cleaning and daily protein removal but prevents any solution reactions developing. Compliance is also more likely with *EverClean+* compared to MPS that require rubbing.



Insertion Drops: Preservative free insertion drops provide improved initial comfort and improved vision. The reason we suggest *OcuDry 0.3%* is from a small group of high myopes one of which was an optometrist *OcuDry 0.3%* provided the best consistency and quality vision compared to other % of HA and other brands.

Patients will get acceptable results with only using MPS but if high myopes get improved performance from PF drops for insertion there will probably be performance benefit for lower Rx patients as well.

NOCTURNAL

Nocturnal™ Starter Box

All new fit patients receive a Nocturnal Starter Box.

The box contains everything they need to get them started including instructions, solutions, lens sucker and their Nocturnal lenses. Once the tray is removed and recycled, the Starter Box doubles as their night lenses storage box to keep all their bits and pieces safe and contained.

All new fit lenses come with our New Fit Guarantee.

Within the instructions booklet patient will find a QR code which takes them direct to the troubleshooting area packed full of advice guides, videos, tips, hints, encouragement, inspiration and support to help them cope through the first few weeks.



“Night Lenses” Marketing

Patients do not understand the terms Ortho-K and Orthokeratology. They find it confusing, impossible to explain to friends and family and ‘unsharable’ in the digital space – essentially an unappealing, specialist, medical device.

Patients call them night lenses, which is why all our marketing refers to them as night lenses. Night lenses are cool, mainstream, highly sharable and easy to explain to friends and family. In their mind there are 4 options for eyecare: glasses, day lenses, night lenses and laser surgery. Simple.

FREE MARKETING SUPPORT

Entrepreneur Tom Griffiths, Managing Director of Scotlens, has successfully created high impact marketing campaigns for over 20 years in his career as the founder of gapyear.com and with his involvement in start-ups and fast growth companies.

Tom joined Scotlens in 2020 and set up a UK-wide network of our Optometrist partners to assist them with media, marketing, social media and all things digital. We have produced a ton of digital assets (social share images, videos, animations, GIF’s...) and assist our partners with their marketing, to develop their websites to promote night lenses effectively and their in-practice training.

nightlenses.com

A huge website we have set up packed full of stories, images, explanations and inspiration that sends enquiring patients who don’t know you direct to your website. A great place to send interested patients and also a great resource for you to use in the test room.

Scotlens Network | Private Facebook Group

This closed group, run by Tom, is where Optometrists and their social media / marketing teams can connect in to get access to all our assets, updates and live 9-5 assistance.

To connect in: email tom@scotlens.com



Myopia Control

Myopia Control Awareness Campaign

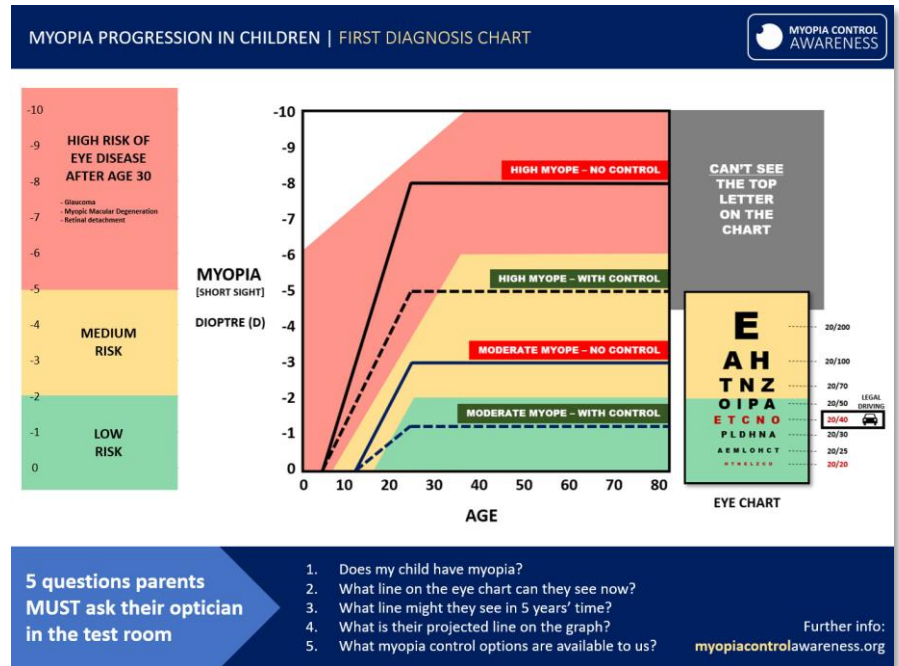
Scotlens is proud to have originated and launched this industry collaboration to educate parents about Myopia, Myopia Progression and Myopia Control.

myopiacontrolawareness.org

This website has been set up as a resource for parents wishing to find out more (it is written in a language they understand) and for Optometrists to use if they need content, images and a tone to use to educate parents in practice, on their websites or in their digital content. The site contains a really useful myopia progression first diagnosis chart, created by parents and Optometrists to enable that first discussion in a way that parents would understand.

How to start the conversation in the test room:

“I’d like to flag up that [name] has Myopia Progression”
... and then use the chart below (download from the site)



To understand more about Myopia Control with Nocturnal night lenses email: scott@scotlens.com



transforming lives by improving vision

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t: 01506 844272 | e: lab@scotlens.com | w: scotlens.com