BLUE FIN VISION®

PATIENT INFORMATION

Blended Vision

Monovision and laser blended vision, by laser or lens surgery

A treatment that depends on tolerance, not on technology

To achieve the immeasurable, you must measure everything.

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> **How to use this leaflet**
>
> This leaflet is written to be read before your appointment. Most of it is about whether your brain will accept blended vision, because that, rather than the laser or the lens, is what determines whether it works for you.
>
> It forms part of your informed consent alongside the assessment and discussion you will have with your surgeon and the consent form you sign, together with the leaflet for whichever procedure is used to deliver it.

About This Leaflet

Blended vision, also called monovision, is a way of reducing dependence on reading glasses by correcting one eye mainly for distance and the other mainly for closer work, so that the two eyes together cover a wider range than either alone.

It can be delivered by laser vision correction, by laser blended vision, or by lens surgery. This leaflet covers the principle that is common to all three. The leaflet for your particular procedure covers how that operation is performed and its own specific risks.

> **The point of this leaflet in one sentence**
> Blended vision succeeds or fails on whether your visual system accepts a deliberate difference between your two eyes. That is a property of you, not of the technology, and it is why we test tolerance rather than assume it.

An assessment that ends in a recommendation against blended vision is a successful assessment. It is the right answer for a substantial minority of the patients who ask for it.[1]

If You Have Already Decided You Want It

Many patients arrive asking for blended vision by name, having researched it or heard about it from somebody who has it. That is a reasonable place to start, and it is a different consultation from the one where a patient simply says they would like to depend less on glasses and leaves the recommendation to us.

Arriving with a request does not change how the decision is made. Blended vision is not a product to be selected but a plan that only works if your visual system accepts it, and whether it does is established by measurement and trial rather than by preference. We will therefore assess your suitability in exactly the same way as for a patient who arrived with no fixed idea. If the assessment does not support it, we will say so and explain what we recommend instead. If it does support it, you have the additional reassurance of knowing that the recommendation followed the findings rather than the request.

Why Reading Vision Changes

When we are young the natural lens changes shape to focus at different distances. That ability weakens throughout life, and from around the age of 40 the loss becomes noticeable, first for small print and in poor light. By around 60 there is almost no focusing ability left. This is presbyopia, and it happens to everyone.

If you are short-sighted you have been able to compensate by removing your glasses to read. That is, in effect, natural monovision in one eye at a time, and it is one reason short-sighted patients are often unusually well prepared for blended vision, and unusually disappointed by full distance correction in both eyes.

Any treatment that gives both eyes their best distance vision will therefore leave you needing glasses for most near tasks. That is not a shortcoming of the surgery: it is the consequence of correcting both eyes for the same distance.

What Blended Vision Is

In blended vision, your dominant eye is corrected for distance and your other eye is left, or made, slightly short-sighted so that it focuses more comfortably at closer range.

The two eyes therefore no longer match. The brain learns to attend to whichever eye is giving the clearer image for the task, and to suppress the blur from the other. In most people this happens without conscious effort within days to weeks. In some it does not happen at all.

How much difference is created

The amount of difference between the two eyes, called anisometropia, is the single most important variable.

- A small difference, often called micro-monovision, gives a modest reading benefit and is usually easy to tolerate.
- A larger difference gives more reading independence but is harder to tolerate and reduces depth perception more.

More reading vision therefore has a price, and the price is paid in binocular quality. The aim is not the maximum difference you can be given, but the largest difference you can comfortably accept.

The Three Ways We Provide It

Method	How it works	Main considerations
Laser monovision	Standard laser vision correction, with the non-dominant eye deliberately left slightly short-sighted.	Adjustable later by further laser. Suits patients with an otherwise clear natural lens.
Laser blended vision, PRESBYOND	Laser treatment that also increases depth of focus in each eye, so the two ranges overlap and a smaller difference between the eyes achieves the same effect.	Often better tolerated than conventional monovision because less anisometropia is needed. Still requires tolerance testing.
Lens surgery monovision	Cataract surgery or lens replacement using monofocal lenses, with one eye targeted for distance and the other for near.	Excellent optical quality in each eye, but far harder to reverse. Requires the most careful selection.

Which of these suits you depends on your age, your prescription, the state of your natural lens, your corneal measurements and your visual priorities. If you already have a cataract, laser is not the appropriate route, and the discussion becomes one about lens surgery.

Laser Blended Vision

Laser blended vision is a refinement of monovision. Alongside correcting each eye, the treatment makes controlled changes to the optical shape of the cornea in order to increase the range of distances over which each eye sees reasonably well.

The specific change is a deliberate, measured increase in an optical property called spherical aberration. That detail matters because it is what distinguishes laser blended vision from conventional monovision. Ordinary monovision simply corrects one eye for distance and one for near. Laser blended vision additionally extends the depth of focus of each eye, and it is that extension which creates the overlap between the two.

At Blue Fin Vision® this is delivered on the ZEISS platform, where the treatment is known as PRESBYOND Laser Blended Vision. Mr Hove is a ZEISS Key Opinion Leader, and the same measurement and planning standards apply to it as to any other laser treatment we perform.

Because each eye now has a longer depth of focus, the two ranges overlap in the middle. That overlap, sometimes called the blend zone, means the intended result can be achieved with a smaller difference between the eyes than conventional monovision requires.

> **Why that matters for tolerance**
>
> Difficulty with monovision usually comes from the difference between the eyes rather than from the reading eye itself. Achieving the same functional result with less difference is therefore easier for most people to accept, and reported tolerance rates are correspondingly high.[3]
>
> It does not, however, remove the need to test your tolerance. It reduces the size of the problem; it does not eliminate the possibility that you are one of the people who cannot adapt.

The trade-off is that increasing depth of focus slightly reduces the crispness of vision at any single distance. Most patients do not notice this. Patients with exacting visual standards sometimes do, and should say so at assessment.

Tolerance Is The Whole Question

Every part of blended vision that goes wrong goes wrong for the same reason: the patient could not adapt to the difference between their eyes.

Patients who cannot adapt describe unstable or swimming vision, difficulty judging distance, headache, eye strain, awareness of blur that will not settle, and in a few cases double vision. These symptoms are not dangerous, but they can be persistent and genuinely disabling, and they are extremely difficult to live with when the eyes are otherwise healthy.

> **This is why we test rather than assume**
>
> There is no scan, measurement or questionnaire that reliably predicts who will adapt. The only dependable test is experiencing it, which is why tolerance testing is a requirement rather than a formality at Blue Fin Vision®.
>
> A patient who has not been tested, or who has been tested for an afternoon in a consulting room, has not been tested.

How We Test Your Tolerance

Tolerance testing simulates the intended result before anything irreversible is done.

- Your dominant eye is established, using more than one method, because dominance is not always obvious and can vary with distance.
- The intended difference between the eyes is created, usually with contact lenses, sometimes initially with trial lenses in the clinic.
- You then live with it. A meaningful trial lasts at least one to two weeks, not an afternoon.
- The trial must include the things you actually do: driving, including at night if you drive at night, screen work, reading, sport, and any occupational task with visual demands.
- You report back honestly, including on anything that felt merely odd rather than clearly wrong.

> **Being unsure is an answer**
> If you finish a proper trial feeling that it was tolerable but not comfortable, that is a reason not to proceed, or to proceed with a smaller difference between the eyes. Blended vision that is merely bearable in a two week trial rarely becomes delightful once it is permanent.

Where a trial shows partial tolerance, the plan can often be adjusted, most commonly by aiming for a smaller difference and accepting that reading glasses will still be needed for small print.

If You Already Wear Monovision Contact Lenses

This is the strongest evidence of tolerance there is, and it is better than any test we could devise.

If you have worn monovision contact lenses successfully for a sustained period, in your ordinary life, and have been comfortable with them, formal tolerance testing is usually unnecessary. You have already run the trial, for longer and more realistically than a clinical test could.

What we will check even so

How long you wore them, whether you were genuinely comfortable or merely coping, which eye was used for near, and how much difference between the eyes you were actually wearing. A patient who tolerated a small difference has not demonstrated tolerance of a large one.

We will also ask whether you still wear them. Tolerance established twenty years ago and abandoned since is a weaker guide than tolerance demonstrated last month.

Why We Are Cautious In Cataract Surgery

Blended vision is generally avoided in cataract surgery unless the patient has already demonstrated tolerance of monovision. The reason is straightforward and it is about testing rather than about the operation.

> **A cataract prevents a valid tolerance test**
>
> Tolerance testing works by simulating the intended result and asking whether you can live with it. A cataract degrades the image in the affected eye, so the simulation is not a simulation of anything: you cannot reproduce the post-operative result through a cloudy lens.
>
> A tolerance test performed through a significant cataract can therefore give a falsely reassuring or falsely discouraging answer, and neither is useful.

Where a patient having cataract surgery has previously worn monovision contact lenses comfortably, that prior experience supplies the evidence the test cannot, and blended vision becomes a reasonable option.

Where there is no such history, the safer approach is to target both eyes for distance, allow vision to settle, and then reconsider. Once the first eye has been operated on and vision is clear, tolerance can be tested properly before the second eye is planned, and a monovision result can still be delivered if you want it. That sequence costs a little time and removes most of the risk.

Deliberately creating anisometropia in an eye that cannot be tested first is a decision that is hard to justify and hard to reverse.

Someone Else Doing Well Is Not A Reason

> **The most common reason patients ask for blended vision**
>
> Almost every patient who requests blended vision has heard about someone who is delighted with it. That person's experience tells you that blended vision works well for some people. It tells you nothing at all about whether it will work for you.
>
> Adaptation to anisometropia varies enormously between individuals and cannot be inferred from a friend, a colleague or a family member. A patient who cannot adapt is left with symptoms that are difficult to treat and, after lens surgery, difficult to undo.

We are not trying to talk you out of it. Blended vision is an excellent option for the right patient, and many of our patients are delighted with it. But the reason to have it is that you have tried it and liked it, not that somebody else did.

Who Is Not Suitable

- Patients who have tried monovision, by contact lens or trial, and did not tolerate it.
- Patients with a squint, a history of childhood squint surgery, or any tendency for the eyes to drift, where deliberately unbalancing the eyes risks double vision.
- Patients with amblyopia, or with significantly reduced vision in one eye, who cannot afford to give up clarity in either.
- Patients whose occupation or licence requires high-grade binocular vision or depth perception, including some aviation, professional driving and safety-critical roles.
- Patients whose principal visual demands are night driving or fine stereoscopic work.
- Patients who want perfect vision at all distances without glasses, which no treatment delivers.
- Patients who cannot commit to a proper tolerance trial before surgery.

Being unsuitable for blended vision does not mean you are unsuitable for surgery. It usually means aiming both eyes for distance and using reading glasses, which is a very good result and the one most patients ultimately have.

What Blended Vision Can and Cannot Do

It can substantially reduce, and frequently remove, the need for glasses for everyday tasks: a phone, a menu, a price label, a computer screen.

What it cannot do

It cannot guarantee freedom from glasses. Most patients still use them for prolonged reading, very small print, poor light, or extended close work.

It cannot give both eyes crisp distance vision at the same time, because that is the opposite of what it is designed to do.

It does not stop the eye ageing, and it does not prevent cataract in an eye that still has its natural lens.

It does not restore depth perception to what it was. Some reduction in fine stereoscopic vision is inherent to the design rather than a complication of it.

Driving and Occupation

Most patients drive comfortably with blended vision, and the legal visual standard for driving is met by the great majority. However, blended vision reduces fine depth perception and can increase awareness of glare and halos at night, and both matter more for driving than for anything else you are likely to do.

For that reason the tolerance trial must include night driving if you drive at night. It is the single situation most likely to reveal intolerance, and the one where discovering it after surgery is least acceptable.

If you hold a vocational licence, fly, or work in a role with a formal visual standard, tell us at your first appointment. Some standards specifically address monovision, and it is your responsibility as well as ours to check the requirements that apply to you before proceeding.

Your Assessment

- A full refraction, and determination of your dominant eye by more than one method.
- Assessment of binocular function, eye alignment and any tendency to drift.
- Measurement of stereoacuity, so that any later change can be compared with your own baseline.
- Corneal topography and, where lens surgery is planned, biometry.
- Assessment of the ocular surface, because an unstable tear film degrades both the measurements and the result.
- Examination of the natural lens, which determines whether laser or lens surgery is the appropriate route.
- A detailed discussion of your visual priorities, your occupation and your hobbies.

The last of these matters as much as any measurement. A keen night driver, a woodworker and a person who reads for four hours a day want different compromises, and blended vision is entirely a matter of compromise.

If You Cannot Tolerate It

Even patients who tolerated the pre-treatment trial well may notice an adaptation period after treatment. Mild awareness of the difference between the eyes, and some fluctuation while the brain settles, usually resolves over days to weeks.

> **Adaptation and intolerance are not the same thing**
>
> Mild, improving symptoms in the early weeks are expected and are worth working through.
>
> Persistent symptoms resembling those experienced during an unsuccessful tolerance trial, or symptoms that are not improving, require reassessment rather than perseverance. You should tell us rather than assume you must simply get used to it.

Where intolerance persists, the options depend on how the blended vision was created.

- After laser treatment, the near eye can usually be treated again to bring it closer to distance. This is straightforward and is covered by the enhancement policy where applicable.
- After lens surgery, glasses or a contact lens over the near eye can restore balance. A lens exchange is possible but is a further intraocular operation with its own risks and is not undertaken lightly.

> **The asymmetry that should shape your decision**
>
> Laser blended vision is comparatively easy to undo. Lens surgery monovision is not. That difference is the reason selection standards are stricter for lens surgery, and the reason we test tolerance more insistently before it.

Reversibility

No refractive treatment is fully reversible, but they differ considerably in how easily they can be adjusted.

Method	Adjusting the result later
Laser monovision or blended vision	Usually adjustable with further laser treatment, subject to sufficient corneal tissue and suitability.
Lens surgery monovision	Requires spectacles, a contact lens, or exchange of the implanted lens, which is a further operation inside the eye.

This asymmetry is not a reason to avoid lens surgery monovision. It is a reason to be certain before it.

Your Alternatives

Both eyes corrected for distance, with reading glasses

The default, and an excellent result. It gives the best distance vision, the best depth perception and the crispest vision at that distance, at the cost of reading glasses. Many patients who consider blended vision choose this and are entirely happy.

Multifocal or extended depth of focus lens implants

Where lens surgery is being performed, these lenses provide a range of vision in both eyes rather than dividing the work between them. They give greater spectacle independence than monovision for most patients, but produce halos and starbursts around lights at night which every patient notices and most adapt to. They are discussed in the lens surgery leaflet.

Monovision contact lenses

If you have not tried monovision, contact lenses are the way to try it, and for some patients they remain the answer rather than a step towards surgery.

Doing nothing

Reading glasses are cheap, safe and effective. Choosing them is a legitimate decision and carries no surgical risk at all.

Risks and Side Effects

The risks of the operation itself are covered in the leaflet for your particular procedure. The risks below are those specific to deliberately unbalancing the two eyes.

Failure to adapt

The principal risk. Unstable vision, difficulty judging distance, eye strain and headache that do not settle. Uncommon after proper tolerance testing, and the reason that testing exists.

Reduced depth perception

A degree of reduction in fine stereoscopic vision is expected rather than a complication. It is most noticeable in fast-moving or precise three-dimensional tasks and in low light.

Reduced night vision quality

Glare, halos and reduced contrast at night can be more noticeable, particularly with larger differences between the eyes and in patients with larger pupils.

Double vision

Rare, but recognised, and more likely where there is a pre-existing tendency for the eyes to drift. This is the reason binocular function is assessed carefully before treatment.

Residual prescription and the need for enhancement

Achieving a specific small difference between the eyes requires accuracy, and a proportion of patients need refinement to reach the intended target. Where the enhancement policy applies, this is covered.

Change over time

Presbyopia continues to progress in an eye that still has its natural lens, so the reading benefit of laser blended vision may reduce over the years. Lens surgery removes that particular variable.

Costs

Blended vision is a way of planning a procedure rather than a separate procedure, so it is not charged separately. You pay for the laser or lens surgery you have, and the leaflet and quotation for that procedure set out the fee.

Item	Fee
Consultation and diagnostic assessment	£500, prepaid separately
Tolerance testing with contact lenses	See current published price
Laser or lens surgery	As quoted for your procedure

Your written quotation confirms exactly what is included before you commit to anything. Current pricing is maintained online: **our published price list**.

Where a refinement is needed to reach your intended target, the Blue Fin Vision® enhancement policy applies in the same way as for any other refractive result: **Blue Fin Vision® Enhancement Policy**. Provider policies vary widely, so ask any provider for their terms in writing.

Questions Worth Asking

You are entitled to clear answers to these questions, from us or from any provider you are considering.

- Which is my dominant eye, and how was that determined?
- How much difference between my eyes are you planning, and why that amount?
- How will my tolerance be tested, and for how long?
- Should the trial include night driving and my work tasks?
- What happens if I am unsure at the end of the trial?
- If I am having cataract surgery, can my tolerance be tested reliably beforehand?
- How reversible is this if I cannot get used to it, and what would that involve?
- What will I still need glasses for?
- How will this affect my depth perception and my night driving?

> **Taking your time**
> Blended vision is elective and there is no clinical urgency whatever. The tolerance trial takes weeks by design, and a provider willing to proceed without one is not saving you time but removing your protection. Blue Fin Vision® does not use time-limited pricing or pressure of any kind.

Where We Operate

Blue Fin Vision® works across the sites below. Governance, protocols and measurement pathways do not vary by postcode.

Site	Address
The Harley Street Eye Centre	22A Harley Street, London W1G 9BP
Weymouth Street Hospital	42-46 Weymouth Street, London W1G 6NP
Phoenix Hospital Chelmsford	Essex Healthcare Park, West Hanningfield Road, Chelmsford CM2 8HN
One Hatfield Hospital	3 Hatfield Avenue, Hatfield, Hertfordshire AL10 9UA
Chase Lodge Hospital	Page Street, Mill Hill, London NW7 2ED
London Eye Diagnostic Centre	25 Harley Street, London W1G 9QW. Insured patients
Abbey Wood Hospital	The Cottage, Bostall Hill, Abbey Wood, London SE2 0GD. Blue Fin Vision® services starting soon

Further information about our structure of care is published at **bluefinvision.com/advantage**.

Your Surgical Team

Blue Fin Vision® is a consultant-led practice. Your assessment, your tolerance testing, your surgery and your follow-up are performed by a named Blue Fin Vision® consultant ophthalmic surgeon, who obtains your consent and remains responsible for your care. This document is authored and clinically governed by our Medical Director.

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Mr Mfazo Hove is a Consultant Ophthalmic Surgeon with experience spanning more than 57 000 procedures. He completed 6.5 years of specialist training at Moorfields Eye Hospital and served as a consultant at the Western Eye Hospital, Imperial College Healthcare NHS Trust, from 2017 to 2022. He has published six consecutive years of outcome data through the National Ophthalmology Database, with a posterior capsule rupture rate in cataract and lens surgery of approximately 0.2 per cent.

Document control

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