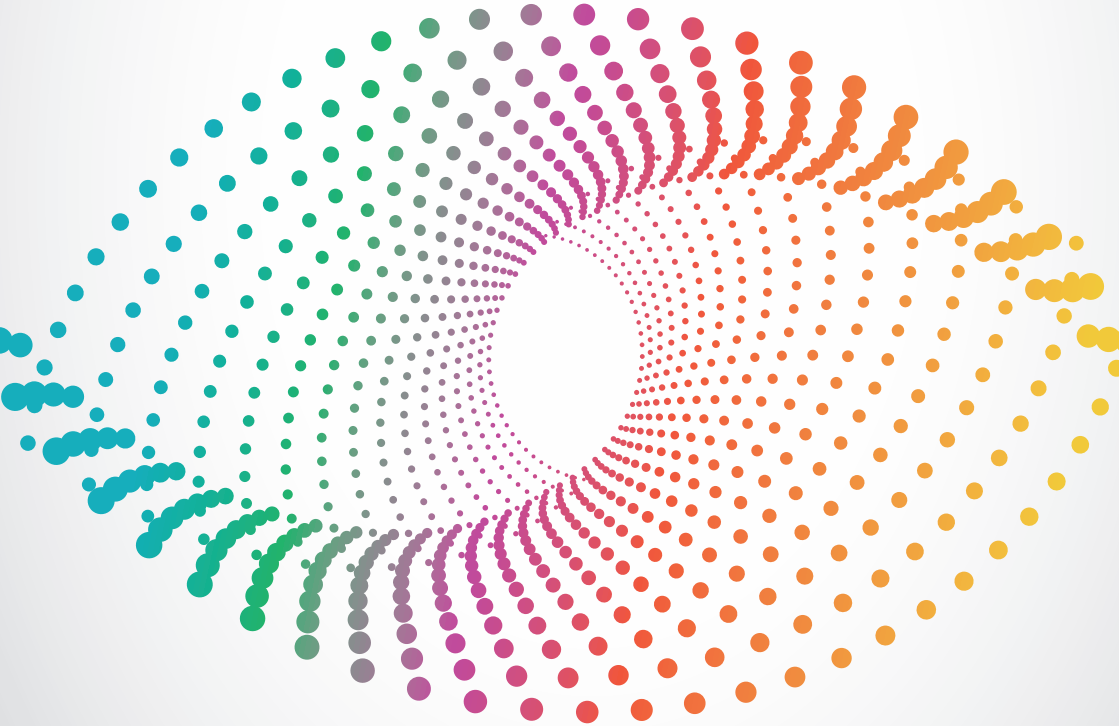
NUMBER 9

CYTOPLAN

THE HEALTH INFORMATION SERIES



EYESIGHT

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Introduction

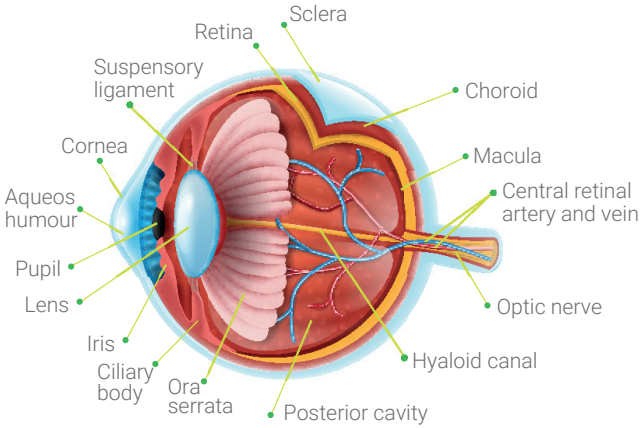
There are many factors which may affect eye health. Some individuals are born with structural abnormalities to the eye which means they require corrective lenses in order to see clearly. These structural changes cannot be modified by diet or lifestyle, although as corrective lenses or even surgery can aid normal vision this is not a major concern. With that said, there are some eye conditions which can manifest, particularly in later life, and have severely detrimental effects on eye health, vision and in some cases even lead to blindness.[1,2]

In this leaflet we are going to focus on the modifiable eye conditions glaucoma, age-related macular degeneration (ARMD), diabetic retinopathy and ischaemic neuropathy.

How normal vision works

Normal vision requires several pathways to work effectively and is very much reliant on a healthy nervous system and cardiovascular function. The process of normal vision is as follows:

1. Light reflects off the objects in the visual field.
2. Light rays enter the eye through the cornea at the front of the eye, pass through the aqueous humour and enter the pupil to reach the lens.
3. The lens can change in thickness via contraction/relaxation of the ciliary muscles to bend the light, in order to focus it onto the retina at the back of the eye.
4. The light passes through a thick, clear fluid called the vitreous humour which fills the eyeball and allows it to maintain its shape.
5. On reaching the back of the eye, light rays hit the retina which contains the photoreceptors, rods and cones. The retina translates the light into nerve transmissions which are then carried to the brain by the optic nerve.
6. Finally, the visual cortex of the brain interprets these transmissions into a visual image.[3]



As well as good cardiovascular and nervous system functioning, structural integrity of the eye, vitreous fluid and retina are all required for this process. In addition, specific nutrients are required for the normal function of rods and cones. Factors which can affect any of these can contribute to eye conditions.

The causes of visual impairment

According to recent estimates, the major global causes of moderate to severe vision impairment are[1]:

- **Uncorrected refractive errors (53%)**
- **Un-operated cataracts (25%)**
- **Age-related macular degeneration (4%)**
- **Glaucoma (2%)**
- **Diabetic retinopathy (1%)**

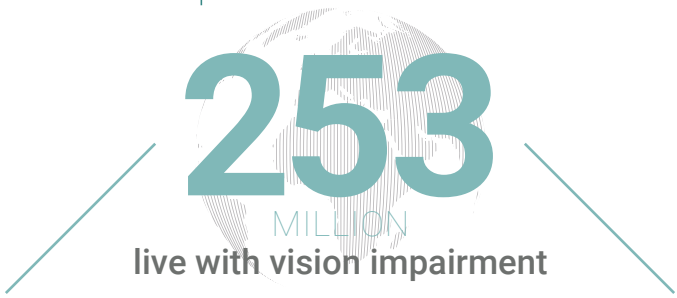
Conditions of visual impairment and underlying pathophysiology[2,4]

Condition	Underlying pathophysiology
Uncorrected refractive errors	The eye cannot clearly focus images from the outside world. The result of refractive errors is blurred vision, which is sometimes so severe that it causes visual impairment. This can be alleviated with corrective lenses
Conjunctivitis	Superficial inflammation or infection of the conjunctiva
Glaucoma	Neurodegenerative disease often associated with increased intraocular pressure (IOP) caused by an excessive accumulation of aqueous humour. This leads to gradual loss of peripheral vision
Cataracts	Progressive opacity or clouding of the lens

Macular degeneration (age-related macular degeneration, ARMD)	Degeneration of the fovea within the macular, which has a high density of cones at the central point of the retina: • **Atrophic (dry) ARMD** – Between 80-95% of patients who suffer from ARMD experience the atrophic or dry form. This form is thought to begin in early life and progress slowly to remove central vision often leaving peripheral vision intact. It would be considered very rare for a patient to become completely blind from this form of ARMD, however there is no medical treatment to reverse the effects of atrophic ARMD at this time • **Neovascular (wet) ARMD** – 5-20% of patients will suffer from the neovascular or wet form. The growth of abnormal blood vessels affects the macular which can, given time, cause more classic forms of ARMD to occur. The neovascular or wet form can be treated by laser photocoagulation therapy if an early diagnosis is made • **Lipofuscin accumulation** is also observed within the retina - fine yellow/brown pigment granules composed of lipid-containing residues of lysosomal digestion
Diabetic retinopathy	A complication of diabetes, caused by high blood sugar levels damaging the back of the eye (retina). It can cause blindness if left undiagnosed and untreated
Ischaemic optic neuropathy	Irreversible ischaemic event associated with the intraocular optic nerve. This induces a loss of visual acuity and visual field

Incidence

According to the World Health Organisation (WHO), an estimated 253 million people live with vision impairment: 36 million are blind and 217 million have moderate to severe vision impairment.



36
MILLION
are blind

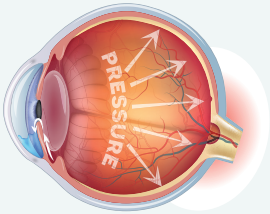
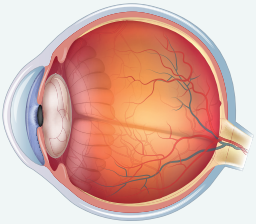
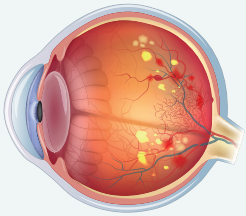
217
MILLION
have moderate to severe vision impairment

Eighty-one percent of people who are blind or who have moderate or severe vision impairment are aged 50 years and above. Globally, chronic eye diseases are the main cause of vision loss.

Over **80%** **of all vision impairment can be prevented or cured**[1]

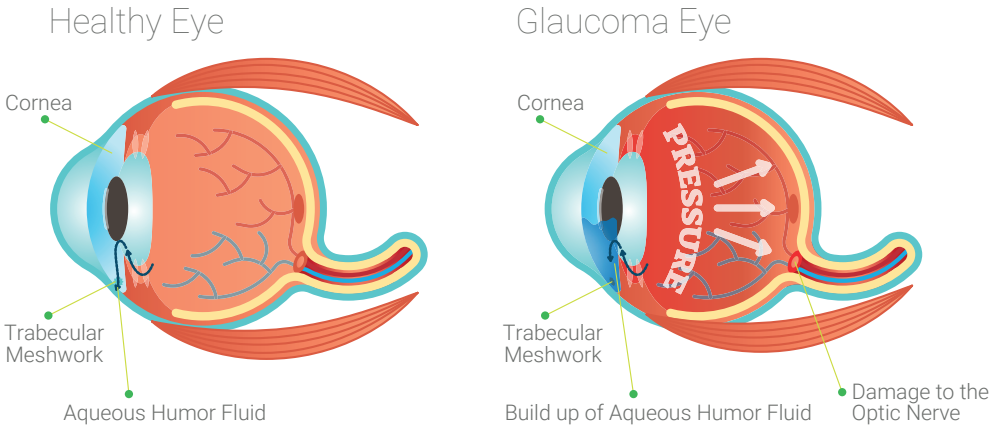
In the UK, there are almost two million people living with sight loss. Of these, around 360,000 are registered as blind or partially sighted.

Diagnosis[2,3]

Condition	Diagnosis
Glaucoma 	A series of tests to measure pressure within the eye, fluid drainage out of the eye and field of vision
Cataracts 	A series of tests can be performed by an optometrist to observe vision impairment and build-up of protein in the lens as well as medical history
Macular degeneration (age-related macular degeneration, ARMD)	Patients reporting blurred vision, objects seeming bent or distorted and black spots appearing in the centre of their vision. Visual tests and examination of the retina can assist the diagnosis
Diabetic retinopathy 	Routine annual NHS eye screening of diabetic patients to check for signs of damage to the retina with specialist cameras
Ischaemic optic neuropathy	Patients with both anterior and posterior ischaemic optic neuropathy present with acute vision loss in one or both eyes that is not associated with pain. Upon examination, they have signs that the optic nerve is not functioning normally[5]

Risk factors for eyesight problems

Glaucoma



Genetics - a family history of the condition increases the risk to between four and nine-fold. Primary congenital glaucoma is usually inherited in an autosomal recessive pattern - which is quite rare -affecting just 1 in 10,000 people.

Increased intraocular pressure - until recently glaucoma has been viewed as a disease of increased intraocular pressure (IOP) which then leads to damage of the optic nerve. However, it is now understood that it is a neurodegenerative condition characterised by the loss of retinal ganglion cells (specific nerve cells which are involved in photoreception and therefore eyesight) and their axons causing mechanical damage to the optic nerve head and inner retinal layers, which eventually leads to progressive, irreversible functional visual field loss. Increased IOP is likely to be a side effect of other risk factors discussed below. Twenty-five percent of glaucoma cases exist without raised IOP, indicating that raised IOP is only one risk factor for the disease.[6,9]

Age - ageing is the greatest risk factor for glaucoma, implying that intrinsic age-related changes to retinal ganglion cells, their supporting tissue, or both, make these cells susceptible to injury.[4]

Oxidative Stress - the high metabolic activity of retinal tissues render retinal glial cells (RGCs – support cells for retina, providing nutrients and removing waste products) are especially vulnerable to oxidative stress. Free radicals interfere with macromolecular cellular constituents of the cells and further lead to derangement of protein breakdown, lipid peroxidation and nucleic acid degeneration, resulting in cell death.[7,9]

Inflammation - oxidative stress and inflammation, which increase reactive oxygen species and inflammatory markers, subsequently lead to mitochondrial dysfunction of retinal ganglion cells.[7,9]

Collagen – there is a strong association with glaucoma and changes to the content and structure of collagen within the eye.[4]

Obstructive sleep apnoea - this is one of the systemic risk factors for glaucoma which causes irreversible visual field damage,[8,9] therefore risk factors for OSA such as obesity and cardiovascular health should be addressed.

Vascular changes – the retina and optic nerve require constant blood flow to meet their high metabolic needs. Insufficient blood supply and nourishment to the retinal nerve fibre layer and optic nerve, as seen in cardiovascular conditions, diabetes and obstructive sleep apnoea, can contribute to glaucoma.[8]

Glutamate - an essential neurotransmitter in the retina can create excitotoxicity when levels are elevated, or there is an increased sensitivity to glutamate, which can then lead to neuronal injury.[7,9]

Nitric oxide (NO) - a free radical, which is formed from L-arginine by nitric oxide (NO) synthetase, is thought to play a role in many neurodegenerative diseases including glaucoma.[7,9]

Glaucoma...

Other risk factors include:[1,2,4]

- Ethnicity (three to four-fold increased risk in African-American populations)
- Medical conditions such as diabetes, heart disease, high blood pressure and sickle cell anaemia
- Eye conditions, such as near-sightedness
- Eye injury or certain types of eye surgery
- Early oestrogen deficiency, as can occur after removal of both ovaries (bilateral oophorectomy) before the age of 43
- Long-term use of corticosteroid medications, especially eye drops

Age-related macular degeneration – ARMD

The fundamental cause of ARMD is damage over time to the macular area in the retina. Risk factors which have been shown to increase this degeneration are:[10]

Ageing - as the name implies, the chance of a diagnosis increases with age. This is primarily down to the natural process of oxidation that occurs in our cells constantly from birth, but it is not the only cause of ARMD which can be accelerated by other factors.

Genetics - new information on ARMD is pointing towards genetics as increasing the risk of developing the disease. Having a family member with the disease, in particular first-degree relatives, increases one's risk. Several single nucleotide polymorphisms (i.e. genetic mutations) associated with ARMD risk in certain populations have also been identified.

Obesity - this is a significant risk factor. For example, a 3% reduction in waist to hip ratio reduces risk for ARMD by 29%.

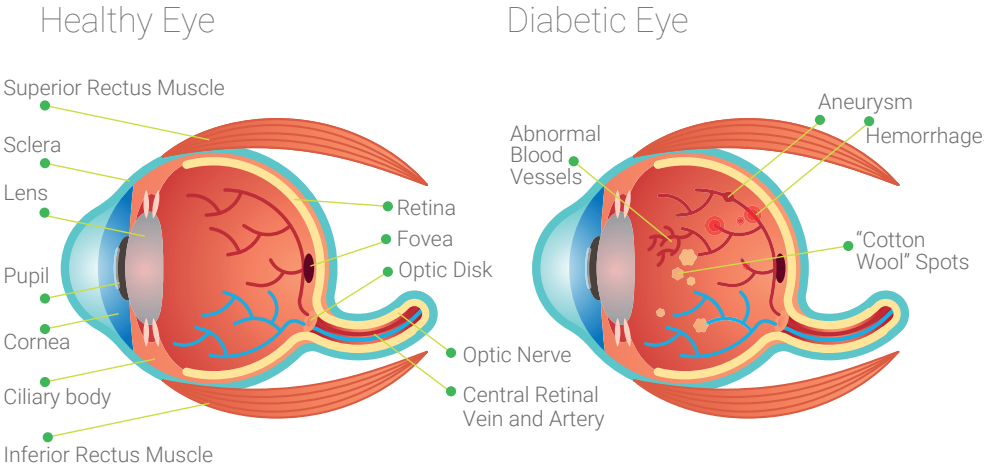
Diet and Lifestyle - while still a new area of investigation, data indicates that consuming higher glycaemic index foods is associated with a greater risk for ARMD or ARMD progression.

Lifestyle factors which research has linked to increased risk of developing age-related macular degeneration include:

- Alcohol
- Smoking – this is the strongest modifiable risk factor, increasing ARMD risk by up to seven times
- Toxins
- Pesticides from food
- Radiation from the sun

Diabetic retinopathy

Fundamentally this is due to poor regulation of blood sugar in diabetic patients, leading to increased blood glucose levels which damage retinal blood vessels. In some cases, these vessels will swell up (macular oedema) and leak fluid into the rear of the eye. In other cases, abnormal blood vessels will grow on the surface of the retina.[2,4]



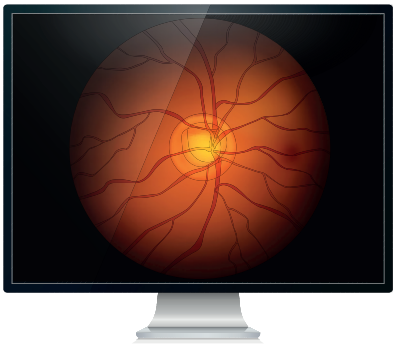
Risk factors

- **Duration of diabetes** — risk of developing diabetic retinopathy increases with length of time there has been a diagnosis of diabetes
- **Poor blood sugar control**
- **High blood pressure**
- **High cholesterol**
- **Pregnancy**
- **Tobacco use**
- **Ethnicity**

Ischaemic optic neuropathy

Caused by insufficient blood supply to the optic nerve. Factors which increase the risk of cardiovascular disease will also increase the risk of ischaemic optic neuropathy.[11,12]

Healthy Eye



Ischaemic optic neuropathy Eye

Specific risk factors:

Elevated plasma homocysteine and lipoprotein(a) levels - increase risk of plaque development within blood vessels.

Low vitamin B6, B12 and folate levels - can lead to increased levels of homocysteine.

Sleep apnoea - increases risk factors for cardiovascular disease such as oxidative stress, inflammation and vascular changes.

Cardiovascular disease/atherosclerosis – potential for plaque formation and ischaemia in the optic blood vessels.

NHS treatments[2]

Condition	NHS treatment
Conjunctivitis	• Antibiotics
Glaucoma	• Prescription eye drops to reduce secretion of aqueous humour or to constrict pupil
Cataracts	• Surgery to remove degenerated material
Macular degeneration	• Anti-VEGF medication to prevent the growth of new blood vessels in the eye • Laser surgery to destroy abnormal blood vessels in the eye
Diabetic retinopathy	• Laser treatment • Injections of medication into eyes • Surgery to remove blood or scar tissue from eyes
Ischaemic optic neuropathy	• None specific, vision will return to normal in 30% of patients • Protect other eye with aspirin and blood pressure monitoring, potentially cardiovascular pharmaceuticals

Dietary recommendations

Although there are a variety of conditions that can affect eye health, at their core they all have oxidative stress, inflammation, neuronal damage and cardiovascular dysfunction. The dietary recommendations below aim to address these:

- **Balance blood sugar levels by avoiding sugar, refined grains and processed food.** Ensure that carbohydrates are wholegrain and consume protein and healthy fat with every meal. This maintains stable insulin levels to help protect against diabetic retinopathy and also reduces inflammation and oxidative stress[11,13]
- **Reduce foods high in omega-6 such as farmed meats, dairy products and vegetable oils (e.g. sunflower and corn oils).** These are high in the omega-6 fatty acids arachidonic acid or linoleic acid (precursor to arachidonic acid). Arachidonic acid can be converted to the pro-inflammatory prostaglandin PGE2[11]
- **Increase sources of omega-3 from oily fish, flax and chia seeds; and/or a supplement containing EPA/DHA.** Alpha linolenic acid is found in flax, chia seeds and dark leafy green vegetables and can be converted to EPA by the body. EPA is converted into anti-inflammatory prostaglandins. Omega-3 fatty acids, particularly DHA are also essential for visual development, endothelial function and myelin sheath production[11,13]
- **The ratio of omega-6 to omega-3 is very important.** The majority of people are consuming too much omega-6 and insufficient omega-3, therefore producing excessive pro-inflammatory prostaglandins
- **Consume six to eight portions of vegetables per day including dark leafy greens high in anti-inflammatory phytonutrients and antioxidants.** Choose orange/yellow vegetables and purple berries which are rich in carotenoids and flavonoids, and dark leafy greens which are rich in lutein, all of which are protective for eye health[14,15]
- **Vitamin E** has been shown to supress inflammatory markers (IL-6, TNFα and NO) and downregulate the transcription factor NF-kB. Sources of vitamin E include avocados, almonds, green vegetables and olives[16]

- **Eat foods rich in vitamin B6 (avocado, brewer's yeast, eggs, legumes, mackerel, sunflower seeds), folate (beans, lentils, eggs, green leafy vegetables) and B12 (eggs, sardines, salmon)**, all of which support the methylation cycle and therefore the reduction of homocysteine (a risk factor for cardiovascular disease and neurodegeneration). They also support normal nervous system functioning[17,18]
- **Use spices, for example, curcumin which is found in turmeric** – this has been shown to inhibit COX-2 enzymes which produce inflammatory prostaglandins[4,11,16]
- **Reduce or avoid gluten containing grains.** Gluten can increase inflammation and permeability of the digestive lining, creating leaky gut and therefore possibly triggering inflammation[19]
- **Choose as much organic produce as possible** in order to reduce exposure to environmental toxins such as pesticides

Various studies in experimental models have shown that neurotrophic factors, especially brain derived neurotrophic growth factor (BDNF), can enhance survival of retinal glial cells after optic nerve injuries.[20,21]

BDNF can be increased by:

- **Exercise**
- **Sleep**
- **Fasting** - allowing a long stretch of at least twelve hours with no food (between dinner and breakfast). Also, fasting for at least three hours between evening meal and bedtime
- **Sunlight** - vitamin D
- **Specific nutrients** including curcumin, green tea, resveratrol and whole fruit coffee extract

Specific nutritional support

Nutritional support for eye health includes: supporting neuronal and cardiovascular health, reducing inflammation and oxidative stress, supporting mitochondrial function and providing specific nutrients required for normal eyesight.

Specific phytonutrients	
Lutein (a carotenoid)	In plants, carotenoids protect the plant cells from sun damage and lutein is also found at high levels in the macular area of the eye. Research has shown that increasing dietary or supplemental intake of lutein can increase macular pigments in the eye. In the Lutein Antioxidant Supplementation Trial (LAST), taking 10mg of supplemental lutein per day for twelve months improved many aspects of vision including increasing 'Snellen equivalent visual acuity' (i.e. sharpness of vision and vision at distance), contrast sensitivity (ability to see details at low contrast levels e.g. at night) as well as macular pigment optical density (i.e. the thickness of the macular pigment), compared to placebo[22,23]
Flavonoids	Recent *in vitro* studies demonstrate that anthocyanins and other flavonoids interact directly with rhodopsin and modulate visual pigment function; and protect a variety of retinal cell types from oxidative stress induced cell death, a neuroprotective property of significance because the retina has the highest metabolic rate of any tissue and is particularly vulnerable to oxidative injury[24]
Zeaxanthin	Zeaxanthin in neural tissue may have antioxidant and anti-inflammatory effects as well as structural functions. Lutein and zeaxanthin may be protective against eye disease because they absorb damaging blue light that enters the eye.[22] Lutein and zeaxanthin supplementation is a safe strategy for improving visual performance of ARMD patients, and this has mainly shown a dose-response relationship[23]

Specific phytonutrients...	
Astaxanthin	Astaxanthin has been shown to provide protection against oxidative stress and inflammation. It has also demonstrated potential for slowing age-related functional decline[25]
Curcumin	Curcumin treatment results in a partial, but significant, inhibition of neuronal and vascular damage during ischaemic or oxidative stress, angiogenesis, cellular malignant transformation, metastasis, and inflammatory diseases. Considering its angiogenesis-modulating profile and anti-inflammatory properties, curcumin has great potential in supporting inflammatory and neovascular proliferative diseases of the retina[26]
Beta carotene	Can be synthesised into vitamin A which is a precursor of rhodopsin, the photopigment found in rods within the retina of the eye and is essential for night vision. Additionally, it has antioxidant properties and works in conjunction with other carotenoids such as lutein and zeaxanthin to protect eye health[24,27]
Bilberry extract	Findings suggest that bilberry extract containing high amounts of polyphenols exerts protective effects against blue LED light-induced retinal photoreceptor cell damage mainly through inhibition of reactive oxygen species production and activation of pro-apoptotic proteins[28]

B Vitamins: many of the B vitamins are involved in normal cellular and DNA replication as well as homocysteine metabolism	
Thiamin (B1)	Shown to stabilise membranes of newly generated neural cells[29]
Riboflavin (B2)	Important for mitochondrial energy production as well as antioxidant defence[30]
Niacin (B3)	Important electron acceptor in cellular respiration and therefore essential for energy production[4,11,30]
P5P (B6)	Supports methylation pathways and clearance of homocysteine[30]
Folate (B9)	Required for DNA and RNA synthesis and supports normal homocysteine metabolism[4,11,17,30]
B12 Methylcobalamin and Hydroxocobalamin	B12 is required for the normal functioning of the nervous system and DNA and RNA synthesis. It is also involved in the normal metabolism of homocysteine[4,11,17] Hydroxocobalamin is a scavenger of nitric oxide. Methylcobalamin is the methylated form of B12, involved in many reactions within the body including the methylation cycle

Other Nutrients	
Vitamin C	Vitamin C acts as an antioxidant and strengthens the collagen structure of the arteries, thus potentially slowing down the progression of atherosclerosis, which as mentioned above, is a risk factor for ARMD, glaucoma and ischaemic retinopathy[4] Low and high-dose supplementary consumption of vitamin C was found to be associated with a decreased risk of glaucoma[31]
Omega-3	Diets rich in fish oil-derived omega-3 fatty acids may reduce retinal pigment epithelium lipofuscin accumulation, retinal pigment epithelium oxidative damage, and the development of ARMD, by enhancing the enzyme acid lipase[32] Data suggests an association between an omega 3:6 ratio intake and incidence of glaucoma, especially among older participants[33] Increasing dietary omega-3, (particularly docosanoids such as DHA) reduces IOP associated with age by increasing the outflow of vitreous fluid. The study concluded that dietary manipulation may provide a modifiable factor for IOP regulation
Vitamin A	Retinoids are vitamin A derivatives which serve as the chromophore (the part of the molecule responsible for colour) for both cone and rod visual pigments and are therefore essential for normal eyesight. *In vivo* studies have shown that supplementation with retinoids slows the loss of cone photoreceptor cells. Therefore, suggesting that they not only have a role in the light response reaction but also in promoting the maintenance of viable cones[34] Vitamin A deficiency is associated with night blindness[18]

Vitamin E	Powerful antioxidant and a component of eye tissue to support healthy vision. Normal levels of vitamin E probably protect photoreceptor membranes from oxidative damage and retard the accumulation of their remnants, as well as other products of lipid breakdown in the pigment epithelium[4,35]
Vitamin D3	Supports intestinal epithelial cell integrity and acts as an immune modulator, therefore can be useful at moderating inflammation[11]
Zinc	Zinc levels in the human retina and retinal pigment epithelium decrease with age and in ARMD. One study provides evidence that 50mg of zinc sulphate can inhibit catabolism associated with increased complement activation in ARMD patients, which could explain part of the mechanism by which zinc slows ARMD progression[36] Zinc is involved in various retinal functions such as phototransduction, the visual cycle, and the process of neurotransmission, being tightly bound to proteins and other molecules to regulate their structure and/or function or as unbound free metal ions. Zinc deficiency is associated with poor dark adaptation[36]
Iron	Iron is also involved in retinal functions such as phototransduction, the visual cycle, and the process of neurotransmission, however, accumulation in the retina, a characteristic of ageing, may be involved in the pathogenesis of retinal diseases such as age-related macular degeneration (ARMD). The changes in iron and zinc homeostasis in ARMD have led to speculation that iron chelation and/or zinc supplements may help in its treatment[31]. This highlights the importance of the balance between zinc and iron
Copper	Copper deficiency is associated with optic neuropathy, but retinal function is maintained[31]

Digestive support

Live bacteria supplements - optimising digestive function and aiding the repair of the digestive lining are important for many aspects of health, including for reducing inflammation and aiding adequate nutrient absorption. It can therefore be useful to support digestive health when reducing risk factors for eye conditions such as glaucoma and ARMD.[37] The microbiota play an essential role in modulating inflammation, therefore using a live bacteria supplement to support the balance of the microflora within the gut is recommended.

Lifestyle and environmental factors affecting eye health

Light-emitting diodes (LEDs) have been used to provide illumination in industrial and commercial environments. LEDs are also used in TVs, computers, smart phones, and tablets. Although the light emitted by most LEDs appears white, LEDs have peak emission in the blue light range (400–490nm). Experimental evidence indicates that wavelengths in the blue part of the spectrum can induce damage in the retina, and although the initial damage following exposure to blue light may be confined to the retinal pigment epithelium, a damaged retinal pigment epithelium eventually leads to photoreceptor death.[38]

Exposure of the retina to intense UV light (from the sun) can induce both photothermal (heat causing changes to protein structure) and photochemical (supercharged molecules) damage to the retinal pigment epithelium.[39]

Fluorescent lights do not provide the full spectrum of light that sunlight does, therefore light quality can be poor and lead to symptoms including eye strain, migraines and seasonal affective disorder.[40]

These issues can be improved by:

- **Taking regular breaks from screens** - at least every hour and also looking away from the screen frequently throughout the day

- **Wearing sunglasses** on bright days and avoiding staring directly at the sun

- **Having exposure to natural light** throughout the day, especially in winter (take a walk at lunch time)

Relevant Cytoplan products

Antioxidants:

Eye-Cyt - Improved

A combination of carotenoids and flavonoids, including lutein, zeaxanthin and meso-zeaxanthin, bilberry extract and grapeseed extract. Additionally, provides zinc and vitamin E

Phytoshield

Phytonutrient and antioxidant supplement containing a variety of flavonoids and carotenoids

Cell-Active Curcumin Plus

Longvida® optimised curcumin plus ginger, supporting anti-inflammatory pathways

Alternative product: Organic Turmeric Plus

Vitamin A (Retinol Palmitate)

Vegan vitamin A supplement providing 5000IU per capsule

Cherry C

200mg of vitamin C from acerola cherry, therefore also provides naturally occurring bioflavonoids

Alternative products: Vitamin C (1000mg), Organic Vitamin C

Mixed Tocopherols and Tocotrienols

Full spectrum of vitamin E which includes all eight tocopherols and tocotrienols

Zinc Citrate

Provides 30mg of zinc per capsule

Alternative products: Wholefood Zinc, Zinc & Copper

Relevant Cytoplan products...

Multivitamin and mineral formula:

CoQ10 Multi

Comprehensive multivitamin and mineral complex providing a full range of B vitamins including methylfolate and methylcobalamin. Also contains 40µg of vitamin D3, 200mg of vitamin C, beta glucan and 80mg of the antioxidant CoQ10 (as ubiquinol)

Alternative products: Foundation Formula 1 and 2

Essential Fatty Acids

Krill Oil

Omega-3 supplement containing DHA and EPA as well as phospholipids. Also provides 100IU of vitamin A and the antioxidant astaxanthin

Alternative products: Omega 3 Vegan, Lem-O-3 Fish Oil

R-Omega

A phospholipid rich DHA and EPA omega-3 supplement from herring roe. The DHA and EPA from herring roe is highly bio-available and more bio-effective than standard fish oils

Alternative products: Omega 3 Vegan, Lem-O-3 Fish Oil

Other:

Vitamin D3 (62.5µg)

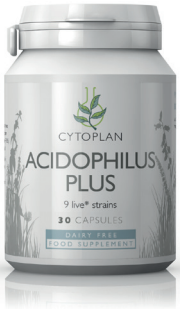
High strength vitamin D3

Alternative products: Vitamin D3 Drops (2 drops = 5µg), Vitamin D3 & K2

Multi B Extra

Supplement containing the B complex vitamins as well as vitamin C and magnesium

Alternative products: Super B Extra, P5P Extra



Acidophilus Plus

Multi strain live bacteria supplement additionally containing 35mg of fructo-oligosaccharides

Alternative products: Fos-A-Dophilus, Cytobiotic Active (powder), Saccharomyces Boulardii

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