azulOptics
Inform Empower Protect

MP-eye

Assessing the retina's defence against harmful light

"I purchased the MP-eye because it helped me have a conversation with my patients about protecting their eyes for the long-term and got me talking about things they could do to reduce their risk of AMD."

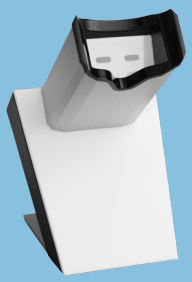
P. Shah, Optometrist

Rapid assessment of AMD risk

Fast
Assessments take 1-3 minutes

Easy
All staff can learn to carry out assess-ments and interpret results in minutes

Value
The MP-eye can pay for itself in under a year



Repeatable
Be confident in each and every assessment

Compact
Needs less desk space than a sheet of paper

The MP-eye reports a single score indicating the strength of your patients' macular pigments, a key risk factor for AMD.

Regular assessments help you identify people who will benefit from additional eyecare products and services.

Empower your patients to make lifestyle changes that maintain and improve long-term eye health.

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Healthy eyes, healthy business

We understand that while the health of your patients is your primary concern, you also need to consider the health of your business. The MP-eye helps you identify patients that would benefit most from protective products, helping you provide a more comprehensive eye exam and boost revenue.

People with low macular pigment density are more susceptible to damage from high-energy visible (HEV) light. You can help them reduce their risk of AMD by adapting their lifestyle to decrease their exposure to HEV and improve their natural levels of defence.

Quit Smoking

Less Sun

Get Fit

Eat Well

Wear a Hat

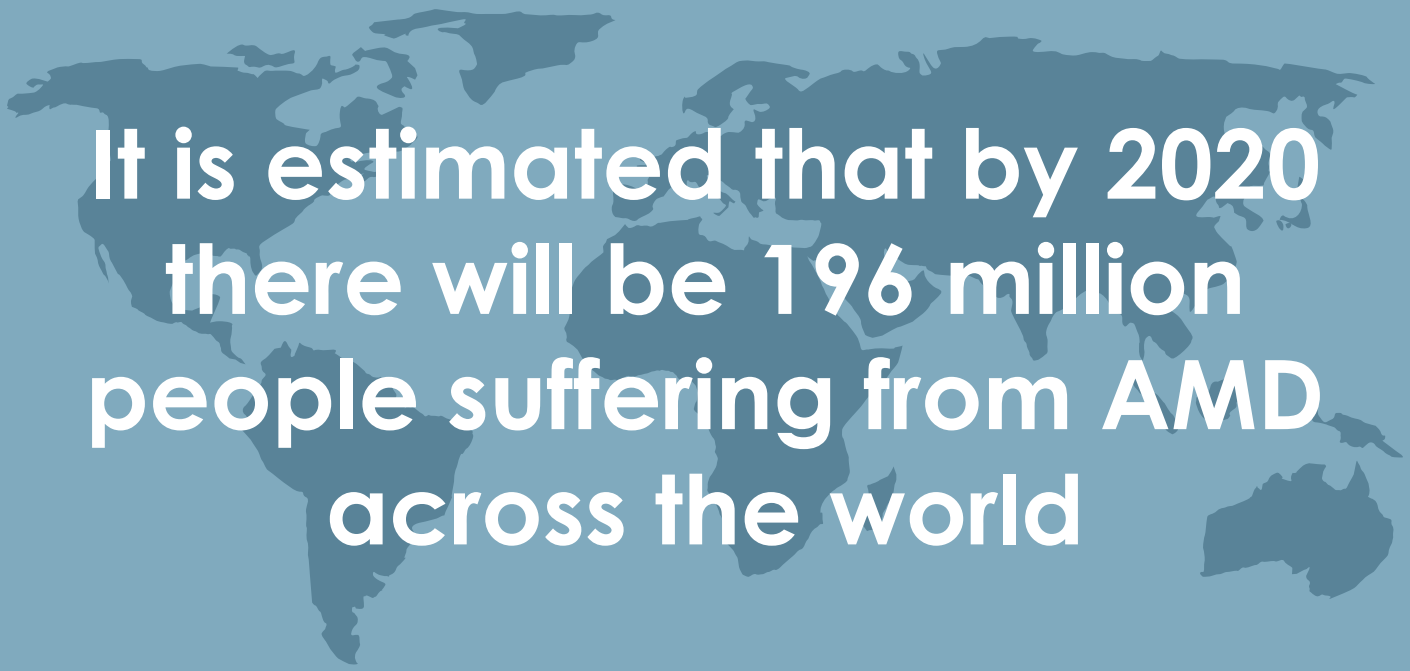
Wear Sunglasses

Protective Lenses

Lose Weight

Eye Vitamins

Age-related Macular Degeneration



It is estimated that by 2020 there will be 196 million people suffering from AMD across the world

What is AMD?

AMD is the leading cause of vision loss among people aged 50 years and older.

It is a degenerative disease characterized by the accumulation of extracellular by-products of photoreceptor metabolism called drusen that are deposited on the retinal pigmented epithelium. It leaves sufferers unable to see faces, drive, or do detailed work including reading and writing.

AMD is far more prevalent than glaucoma or cataracts, representing 50% of all cases of sight loss. Around 5% of those over 65 years of age will develop late stage AMD, which rises to 15% by 80 years of age.

There are two types of AMD – wet and dry. Wet AMD represents about 10% of cases and is presently treated with injections, which can help slow progression. Dry AMD represents the remaining 90%, for which there is no known treatment. Both are incurable.

While there is no one known cause of AMD, research suggests that taking action when you are young can lower your chances of contracting AMD later in life.

Macular pigmentation has been linked to risk of AMD and is a modifiable risk factor. The problem is that most people do not know how well protected they are.

Prevention is the only option

Light exposure increases risk of AMD

The blue/violet end of the visible spectrum is known as high-energy visible (HEV) light. Like UV radiation, HEV carries enough energy per photon to cause photochemical damage to living cells over time.

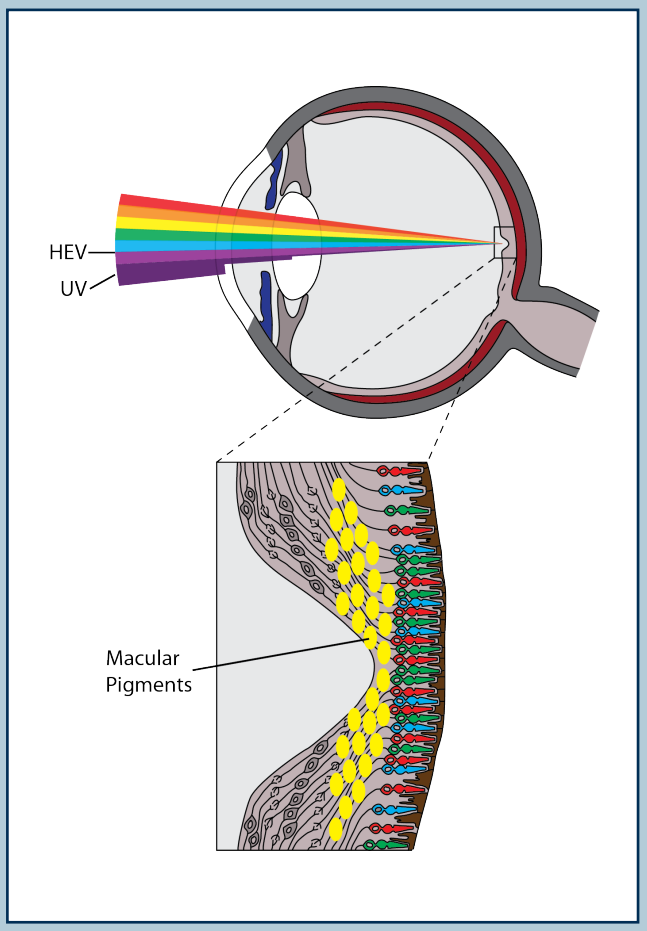
The cornea and lens block most UV radiation but HEV light penetrates through to the retina where it causes both thermal (type 1) and photochemical (type 2) damage.

While retinal cells do have repair mechanisms, they do not regenerate like other cells in the body (e.g. skin cells that are also exposed to HEV are replaced every 5 days). Through life exposure to HEV light leads to accumulation of irrepairable damage to DNA leading to retinal cell death.

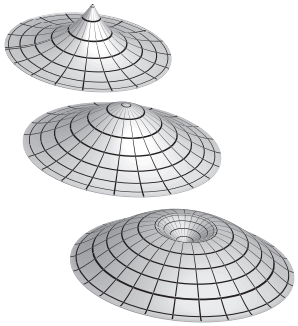
Macular pigments reduce risk of damage from HEV light

Macular Pigments - lutein, zeaxanthin and mesozeaxanthin - are only obtained from our diet and provide two major benefits:
1) Act as natural sunglasses removing up to 90% of HEV light (Margrain et al., 2004).
2) Act as antioxidants that counter photochemical damage caused by HEV light (Krinsky 1989).

Because retinal cells must last your entire life, once serious damage occurs it is irreversible. The damage accumulates over time and can lead to drusen, AMD and vision loss.



New method of assessment



The distribution of macular pigments is variable, some people have a central peak, others a smooth curve, and some have a central dip. A single measure in the centre of the distribution does not accurately reflect the total amount (volume) of macular pigment.

The MP-eye uses an entirely new technology to assess the volume of macular pigment in the eye using polarized light that is specifically absorbed by the macular pigments.

The link between AMD and low macular pigments

Several studies (see below) show a correlation between low macular pigments and development of AMD, however, a causal link can only be demonstrated in a very long-term study.
AREDS II claimed no preventative effect of macular pigment supplementation, however, this 5 year study of an aged population was insufficient to expect any noticeable change in AMD risk.

Even though there is no clear causal evidence, as research into AMD advances, the link between low macular pigments and AMD seems to get stronger and stronger. The list below highlights key factors that link low macular pigmentation with increased risk of AMD and provides relevant evidence.

Drusen

Large soft drusen is the hallmark for risk of AMD (Sarks et al., 1994)

Low macular pigmentation decreases the age at which soft drusen form* (McGill, 2018)

Smoking

Smokers have an increased risk of developing AMD (West et al., 1989)

Smokers have decreased macular pigmentation (Nolan et al., 2007, Hammond and Caruso-Avery, 2000)

Poor diet

Poor diet, specifically low in leafy green and brightly coloured fruits and vegetables is a well-established risk factor for AMD (Pipis et al., 2013)

Leafy green and brightly coloured fruits and vegetables are the best source of MPs (Sommerburg et al., 1998)

Obesity

Obesity increases risk of developing AMD (Adams et al., 2011, Zhang et al., 2016, Johnson, 2005)

Increased adipose tissue decreases macular pigmentation (Kirby et al., 2011, Hammond and Caruso-Avery, 2000)

Light Exposure

Sunlight exposure increases risk of developing AMD (Schick et al., 2016, Sui et al., 2013)

MPs decrease the amount of high energy visible light that reaches the retina (Margrain et al., 2004) People with lower MP denisty had a greater odds ratio for AMD (Flecher et al., 2008)

Epidemiological studies have shown that decreased MPs are correlated with increased risk of AMD.

(Wu et al., 2015, Bone et al., 2001, Beatty et al., 2001, Bernstein et al., 2002, Kaya et al., 2012, Trieschmann et al., 2003, Obana et al., 2008, Ozawa et al., 2017, Ozyurt et al., 2017)

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*Macular pigment density was controlled in a 28 year study in which diets normal and poor in macular pigments were fed to Rhesus macaques, which have the same retinal structure as humans. Drusen was assessed using the AREDS categories and formed at 65 human equivalent years in normal diet group and 35 human equivalent years in macular pigment poor diet group.

azulOptics
Protecting vision through innovation

For more information contact
info@azuloptics.com

Technical Specification

Device Model	MP-eye
Classification	Class 1 Mains Operated Type B applied part
Ingress Protection	IPX0
Dimensions (H x D x W)	430 mm x 250 mm x 430 mm
Input	12V 3A DC
User Input	Android Tablet
Part No.	A-0001-M1

Contact Address:
Azul Optics
Henleaze House,
Henleaze,
Bristol, UK
BS9 4PN

Registered Address:
Azul Optics
102 Hill View
Henleaze
Bristol, UK
BS9 4QG

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SIR Oftalmica Srl

Via Torriani 19/C

22100 - COMO

Tel. : 031-570869

info@siroftalmica.com

www.siroftalmica.com

P.IVA : 01814920136

Contatti specialists:

A. Molteni: 328.1808176

L. Ronchi: 335.6167324

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