# Antioxidant vitamins for age-related macular degeneration

There is some evidence that taking a specific combination of antioxidant vitamins and minerals can help slow down the progression (worsening) of age-related macular degeneration (AMD).

According to the research, the potential benefit of taking an antioxidant vitamin and mineral supplement depends on how likely it is for your AMD to progress, and whether it is affecting one or both of your eyes. Although, even then, antioxidant vitamins along with some minerals have only been shown to reduce the risk of AMD worsening by a small amount.

If you are diagnosed with AMD with a high risk of progression, then taking a supplement has been shown to slow the progression by about 25%. However, some people may feel that something that could help reduce the risk of sight loss from AMD may be worthwhile. If you have early stage with a low risk of progression then taking supplements is likely to have no effect.

## What is AMD?

AMD affects a tiny part of the retina, a light sensitive layer at the back of your eye, called the macula. AMD causes changes to the macula, which lead to problems with your central vision, the vision you use when you’re looking straight at something, for example when you’re reading, looking at photos or watching television. The macula is also responsible for your colour vision.

You can find more information about AMD in our Understanding Age-related macular degeneration booklet, on our website [www.rnib.org.uk/eyehealth](http://www.rnib.org.uk/eyehealth) or by calling our Helpline on 0303 123 9999.

## Early stage AMD

The different stages of AMD can be classified by the changes an optometrist (optician) or ophthalmologist (hospital eye doctor) sees at the macula and also how much AMD is affecting someone’s vision.

In the early stages of AMD, it is possible to have changes at the macula, which an optometrist or ophthalmologist can see when they examine your eye, but not have any problems with your sight.

An optometrist or ophthalmologist may see 'drusen', when they examine your retina. Drusen are small deposits under the retina, which they can see as yellow dots. Drusen can be present as a normal part of ageing and are not always a sign that someone has AMD.

Your optometrist or ophthalmologist might say you have early AMD if you have larger drusen in one or both your eyes. Other changes at the macula, as well as drusen, will indicate whether your early AMD has a low, medium or high risk of progression (worsening).

Some people with early AMD are considered to be more at risk of progression of the condition. An optometrist or ophthalmologist will be able to see an increased number of larger drusen when examining your macula or other changes that might indicate you are at higher risk of progression.

## Dry and wet AMD

There are two main types of AMD – “wet” AMD and “dry” AMD. They are called “wet” and “dry” because of what happens inside your eye and what the optometrist or ophthalmologist sees when examining the back of your eye, not because of how your eye feels or whether you have a watery or dry eye.

### Dry AMD

Dry AMD is the more common type of AMD. It develops very slowly and causes a gradual change in your central vision. Dry AMD usually takes a long time – often years, to get to its final stage. At its final stage, dry AMD causes a blank patch in the centre of your vision in both of your eyes. It doesn’t affect your peripheral (side) vision, so it never leads to total blindness.

Early stage AMD is always dry AMD. Late AMD is when you have wet AMD or dry AMD which has caused extensive scarring to the macula and significant changes to your sight.

### Wet AMD

About 10 to 15 per cent of people who develop AMD have wet AMD, often having had dry AMD to begin with. You develop wet AMD when the cells of the macula stop working correctly and your body starts growing new blood vessels to fix the problem. These blood vessels are very weak and grow in the wrong place, so they cause swelling, leaking and bleeding underneath the macula, this is why the condition is described as “wet” AMD. Wet AMD is classified as late AMD.

New blood vessel growth is medically known as “neovascularisation”. Neovascularisation can cause a lot of damage to your macula and can eventually lead to scarring. Both the new blood vessels and the scarring cause damage to your central vision and may lead to a blank patch in the centre of your sight.

Wet AMD can develop very quickly, causing serious changes to your central vision in a short period of time, over days or weeks.

Treatment is available for wet AMD, which aims to stop new blood vessels from growing and damaging your macula to prevent a worsening of your sight.

## What vitamins are used for AMD?

The nutritional supplements concerned with AMD are mainly “antioxidant” vitamins. It is thought that antioxidants are helpful in AMD because of the “free radical” theory of cell damage. Free radicals are thought to be partly responsible for the “wear and tear” we call ageing.

Antioxidants are thought to help by “mopping up” these free radicals, to delay or prevent them from damaging your cells. Research into vitamins for AMD has looked at whether antioxidants can help to protect the macula from these age-related changes.

## The Age-Related Eye Disease Studies (AREDS)

At present the strongest evidence about which vitamin formula to take comes from AREDS (2001) & AREDS2 (2012), two large-scale clinical trials carried out in the United States.

The aim of these studies was to find out whether taking a vitamin formula could help slow down the development of AMD. People on these trials were given high levels of antioxidant vitamins and zinc to see if these could slow down the progression of AMD so that it does not reach the stage where vision is severely affected (“late” AMD).

### Results of AREDS

AREDS found that people diagnosed as being at medium or high risk of progression of AMD, who took the “AREDS formula” used on the trial, reduced their progression by 25%. However, the beneficial effect of taking the supplement was not significant in those with a diagnosis of early stage low risk AMD.

The AREDS formula which gave these results, taken as a single tablet every day was:

500 milligrams (mg) of vitamin C

400 international units of vitamin E

15 mg beta-carotene

80 mg zinc as zinc oxide

2 mg copper as cupric oxide (added because high levels of zinc can reduce the amount of copper in the body)

**Concern for smokers**

Beta-carotene supplements have been found to increase the risk of lung cancer in smokers and people who have previously smoked.

### Results of AREDS2

The second AREDS trial, AREDS2, looked at replacing beta-carotene with different antioxidants, lutein and zeaxanthin. No link has been found between lung cancer and lutein and zeaxanthin for either current or ex-smokers.

The results of AREDS 2 showed a similar reduction in risk of progression to late AMD as in the first AREDS formula.

Based on the results of AREDS and AREDS2 and concerns about the risk of beta-carotene for smokers, the current recommended daily formula to slow down the progression of AMD in people already diagnosed is:

500 milligrams (mg) of vitamin C

400 international units (equivalent to about 270 mg) of

vitamin E

10 mg lutein

2 mg zeaxanthin

25 mg or 80 mg zinc as zinc oxide (as recommended by your doctor)

2 mg copper as cupric oxide

## How good is the evidence?

National Institute for Health and Care Excellence (NICE) is the organisation that considers the evidence behind treatments for all general health conditions and provide patients, health professionals and the general public with reliable guidance on current best medical practice. NICE has not approved the use of antioxidant vitamins and minerals in the management of AMD.

They reviewed the evidence around the use of these supplements, which includes the two large scale studies, AREDS and AREDS 2. They found that the evidence that they benefit people with AMD was not strong enough to recommend that people take these supplements. NICE have made a recommendation that further large-scale studies are needed before they can be confident that the AREDS2 formula is effective at preventing worsening of AMD.

However, so far there’s no other research of the same quality to compare these results to, and so at present this is the only information we have to go with regarding vitamin and mineral supplements and AMD.

This means that at present these supplements cannot be clearly recommended to everyone with AMD. More research is needed to determine if antioxidant and other supplements marketed for AMD are worth taking.

Although generally regarded as safe, vitamin supplements may have harmful effects. Therefore, it is always important to get medical advice before starting to take any supplement.

## I have some problems with my vision due to AMD, could taking a supplement help me?

If you have AMD, whether it would be worth taking a supplement will depend on the stage your AMD is at and the risk of it worsening.

Evidence shows that supplements may help if you are at high or medium risk of developing late AMD. This is if:

* You have early stage AMD with a high or medium risk of it worsening in one or both eyes. Taking a supplement may help to prevent your sight from worsening.

Or:

* You have wet AMD in one eye and your other eye has early dry AMD. Taking a supplement won’t help the eye with wet AMD but may help prevent wet AMD developing in the other eye.

However, there are no guarantees that the recommended formula will definitely prevent a worsening of your vision when you’re at high risk of developing late stage AMD. The evidence does not suggest that these supplements will help everyone.

If you are not sure how advanced your condition is then you should ask your ophthalmologist whether taking a supplement could help.

## I have early stage low risk AMD, should I take a supplement?

If your optometrist or ophthalmologist has said you have drusen or early AMD with low risk of progression, and your sight is not affected, there is no evidence that taking a supplement will help to slow down the development of AMD.

## I have wet AMD in both eyes or late stage dry AMD in both eyes could taking a supplement help me?

If you have wet AMD in both eyes or have late stage dry AMD in both eyes (your vision is very poor in both eyes), unfortunately there is no evidence that taking a supplement will be helpful.

## Are there any risks to taking supplements?

Although nutritional supplements are generally regarded as safe, they may have harmful effects in certain people.

If you are thinking about taking a supplement for AMD, it would be important to discuss this with your GP, as taking larger amounts of vitamins and minerals than those found in an everyday diet may not be suitable for you, depending on other medications or supplements you may be taking.

If you are a smoker or have ever smoked in the past, it’s important to make sure any supplement you take does not contain beta-carotene. This is because there is evidence that beta-carotene increases the risk of lung cancer in smokers and ex-smokers. The recommended AREDS2 supplement does not contain beta-carotene.

Additionally, an optometrist or ophthalmologist can advise if taking a supplement for AMD is the right option for you based on the stage your AMD is at.

## There are many supplements on the market for people with AMD, which one is the best?

Unfortunately, we cannot recommend that someone should take a supplement for AMD, or which one they should take.

There are several brands of supplements marketed as containing the “AREDS2” formula. If you are considering taking a supplement for AMD, you should choose the ones marked as containing the AREDS2 formula, as these conform to the best evidence currently available.

If you are not sure if a brand of supplement contains the AREDS2 formula, your GP or a pharmacist should be able to check this for you.

## Can I get supplements on NHS prescription?

The NHS does not usually fund supplements for AMD; however, this can depend on where you live. Your GP would be able to advise you about what the funding situation is in your area.

## Buying online

Sometimes it can be cheaper to buy supplements on the internet (online). It is important if you are considering buying online to buy from a reputable source.

The UK Governmental body called the Medicines and Healthcare products Regulatory Agency (MHRA) has a register which you can use to check if a website is legally allowed to sell medicines and nutritional supplements to the public.

You can find this here:

https://medicine-seller-register.mhra.gov.uk/

## I am worried that I might develop AMD, can supplements prevent it?

Several studies have looked at the role of antioxidant supplements in the prevention of AMD. At present there is no evidence to suggest that people who don’t have AMD should take lutein and zeaxanthin, antioxidant supplements such as the AREDS2 formula or any other multivitamins marketed for eye health, to prevent them from developing AMD in the future.

## What can I do to keep my eyes healthy if I have AMD or to prevent AMD?

### Your diet

A healthy diet full of fruits and vegetables is thought to be beneficial in keeping our eyes as heathy as possible. Fruit and vegetables are an important source of vitamins and minerals. The NHS advises we should eat at least 5 portions of a variety of fruit and vegetables every day.

If you have difficulty digesting food, your GP may recommend a supplement so that you can get the right amount, but most people can get all the vitamins and minerals they need through diet alone.

### Your lifestyle

High blood pressure and lack of exercise have been identified as possible risk factors for AMD; therefore, maintaining a healthy weight and living an active lifestyle with regular exercise is recommended.

### Quit smoking

Smoking dramatically increases the risk of developing AMD and is linked to the development of cataract and other eye conditions. Your GP can give you details of your local stop smoking service and you can also get help and advice on quitting from the NHS website Smokefree - <https://www.nhs.uk/smokefree>.

### Sunlight

Some studies have suggested that exposure to high levels of sunlight (particularly the UV light contained in sunlight) throughout your life may increase your risk of developing AMD, but this has not been proven. However, wearing sunglasses to protect your eyes from the UV light in sunlight is a good idea for everyone throughout their life.

### Monitoring vision and regular eye examinations

It is important if you are diagnosed with early AMD to monitor your vision for changes. Your optometrist can advise you how you can do this.

Having regular eye examinations are an important health check for your eyes and will also allow your optometrist to monitor for any changes if you have AMD. Your optometrist will be able to tell you how often you need an eye examination.

## Coping

It’s completely natural to be upset when you’ve been diagnosed with AMD and it’s normal to find yourself worrying about the future of your sight.

It can sometimes be helpful to talk about these feelings with someone outside your circle of friends or family. At RNIB, we can help with our telephone Helpline and our Counselling and Wellbeing team. Your GP or social worker may also find a counsellor for you if you feel this might help.

Your eye clinic may also have a sight loss adviser (also known as an Eye Clinic Liaison Officer, ECLO or Vision Support Officer) who can be on hand to provide you with further practical and emotional support about AMD.

## Help to see things better

Having AMD can cause changes to your vision, but much can be done to help you make the most of your remaining vision and adapt to any changes.

There are lots of things that you can do to make the most of your remaining vision. This may mean making things bigger, using brighter lighting or using colour to make things easier to see. We have a series of leaflets with helpful information on living with sight loss, including how to make the most of your sight. You can find out more about our range of titles by calling our Helpline 0303 123 9999.

You can also ask your ophthalmologist, optometrist or GP about low vision aids and having a low vision assessment. During this assessment, you’ll be able to discuss the use of magnifiers and other aids to see things more clearly.

You should also ask whether you are eligible to register as sight impaired (partially sighted) or severely sight impaired (blind). Registration can act as your passport to expert help and sometimes to financial concessions. Even if you aren’t registered a lot of this support is still available to you.

Local social services should also be able to offer you information on staying safe in your home and getting out and about safely.

They should also be able to offer you some practical mobility training to give you more confidence when you are out.

Our Helpline can also give you information about the low vision services available, and our website offers lots of practical information about adapting to changes in your vision and products that make everyday tasks easier.

## Sources of support

Our Helpline is your direct line to the support, advice and services you need. Whether you want to know more about your eye condition, buy a product from our shop, join our library, find out about possible benefit entitlements, or be put in touch with a trained counsellor, we’re only a call away.

It’s also a way for you to join RNIB Connect, our community for anyone affected by sight loss. RNIB Connect is free to join and you’ll have the chance to meet other people with similar experiences in our helpful, welcoming and supportive community.

Give us a call today to find out how we can help you.

**RNIB Helpline**

**0303 123 9999**

**helpline@rnib.org.uk**

We’re ready to answer your call Monday to Friday 8am to 8pm and Saturday 9am to 1pm.

You can also get in touch by post or by visiting our website:

**RNIB**

105 Judd Street

London WC1H 9NE

**www.rnib.org.uk**

### Other useful contacts

**Macular Society**

PO Box 1870

Andover SP10 9AD

**Helpline: 0300 3030 111**

**www.macularsociety.org**

## We value your feedback

You can help us improve our information by letting us know what you think about it. Is this factsheet useful, easy to read and detailed enough – or could we improve it?

Send your comments to us by emailing us at eyehealth@rnib.org.uk or by writing to the Eye Health Information service, RNIB, 105 Judd Street, London, WC1H 9NE.

This factsheet has been written by the RNIB Eye Health Information service. Our factsheets have been produced with the assistance of patient and carer input and up-to-date reliable sources of evidence. The accuracy of medical information has been checked by medical specialists. If you would like a list of references for any of our factsheets, please contact us at eyehealth@rnib.org.uk.

All of our factsheets are available in a range of formats including print, audio and braille.

**Last updated: Oct 2020**

**Next review: Oct 2023**