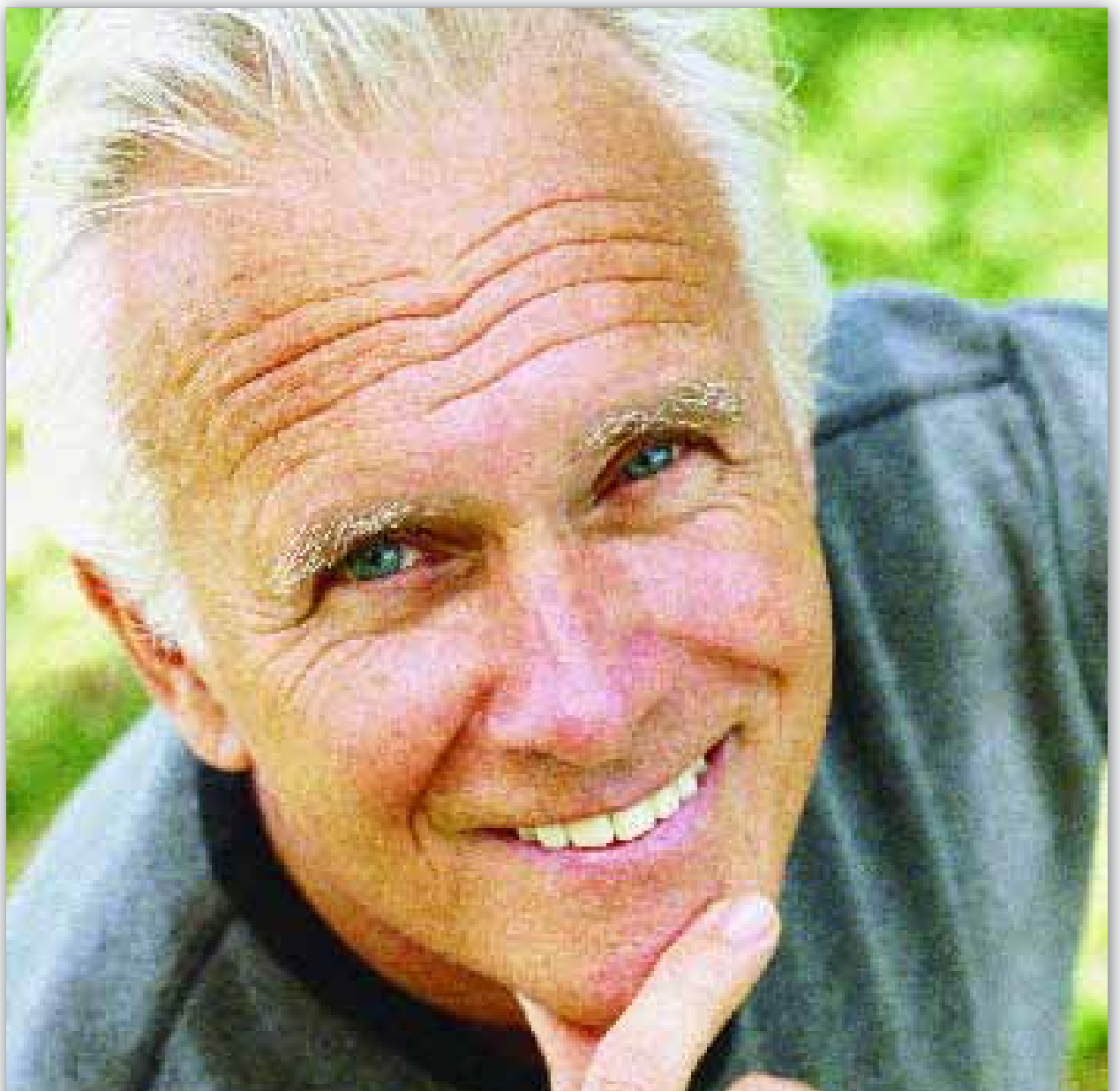


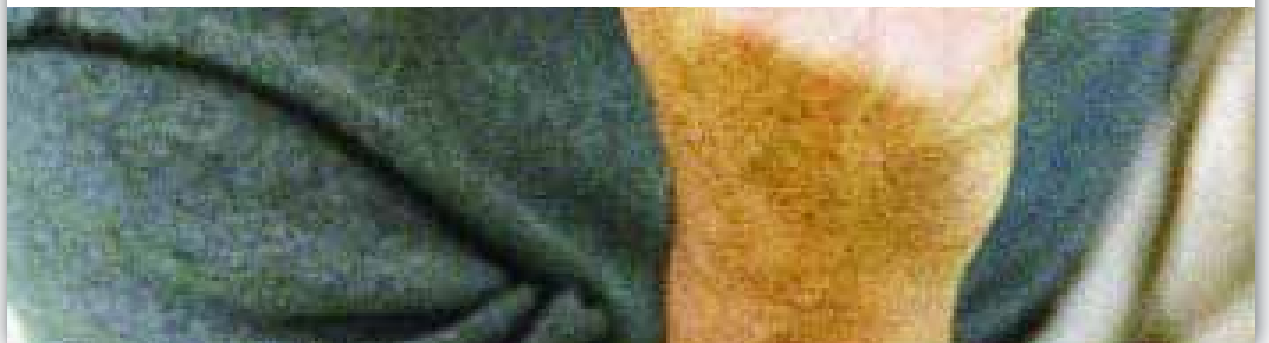
AMD

A guide to understanding AMD





> Knowledge is power. Take a few minutes to learn about AMD – it may help you in the long run.



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Age-related Macular Degeneration (AMD)

If you are like many Canadians, you probably don't know a lot about Age-related Macular Degeneration (AMD). Even if you already have it, you may not fully understand what's going on inside your eyes. This booklet has been developed to help meet the needs of people who may be at risk of developing AMD and for those who have recently been diagnosed with it. There are five sections:

- 1. Introduction to AMD.** General information about AMD that everyone should know.
- 2. Risk Factors.** For everyone, but especially if you are over 50 years of age, because you'll soon be in the age-group that is susceptible to developing AMD.
- 3. What is Dry AMD?** A brief explanation of the most common form of AMD.
- 4. What is Wet AMD?** A simplified explanation of a very complex disease.
- 5. Living with AMD.** Practical information and tips for anyone living with AMD.

As its name suggests, Age-related Macular Degeneration is a disease linked to age. Specifically, people over age fifty. In spite of the fact that AMD is the leading cause of severe vision loss and legal blindness in people over 50 in the Western world, it's still relatively unknown. Knowledge is power. Take a few minutes to learn about AMD – it may help you in the long run.



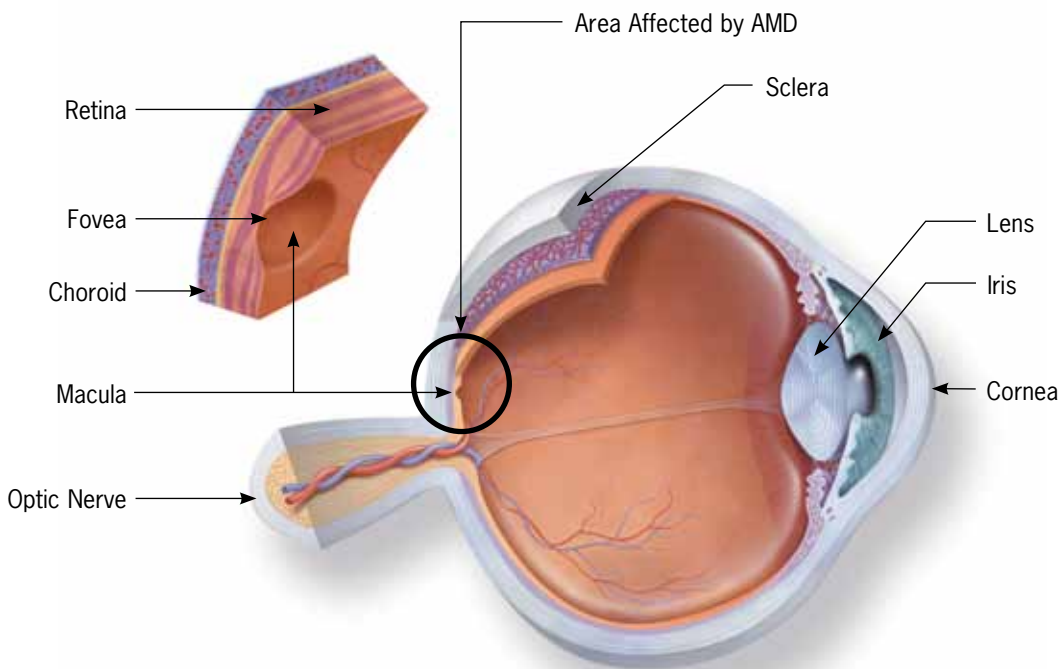
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> Risk increases with advancing age; from 8.5% for people 43–54 years of age to a high of 36.8% for people over 75.



Introduction to AMD

AMD is a chronic, age-related, degenerative disease of the macula. The macula is a very small and specialized area in the centre of the retina. The macula allows you to see fine details directly in front of you such as words in a book or images on television. So while the entire retina lets you see that there is a book in front of you, the macula lets you see what is written in the book.



> The eyeball with detail of the Retina and area affected by AMD.

Two Types of AMD

There are two types of AMD, dry AMD and wet AMD. Generally speaking, dry AMD progresses quite slowly and is usually less severe than the wet type. But both types damage the macula and both can take away your central vision, which means the images you see directly in front of you.

With impaired central vision, you might not be able to do some of the things you normally take for granted, like reading, driving, a favourite hobby and more.

Early detection and intervention is key to preventing or delaying vision loss. In the case of dry AMD, unless it's detected in a routine eye exam, you may not even realize that you have the disease until it reaches an advanced stage. This is due to its usually slow and painless progression over a period of years and the ability of one eye to compensate for any weakness in the other.

On the other hand, wet AMD can cause severe and irreversible central blindness, often within months, sometimes even weeks. Therefore, it is important to visit your eye doctor regularly, especially if you determine that you're at risk.

Risk Factors

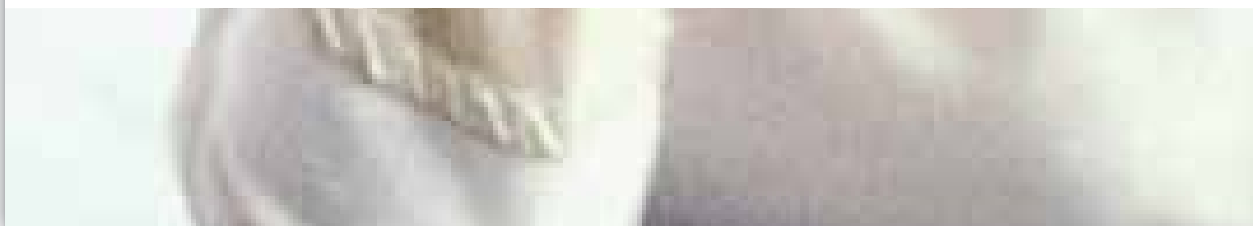
There are a number of factors both in and out of your control that can put you at increased risk for developing AMD. Knowing what they are might inspire you to make certain lifestyle modifications that can help to reduce that risk. Some of the known and suspected risk factors that you can't do anything about are:

- > Age: Risk increases with advancing age; from 8.5% for people 43–54 years of age to a high of 36.8% for people over 75
- > Family History: Up to 3 times greater risk within families (parents and siblings)
- > Gender: Females are more susceptible



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> It's important to be proactive and do everything possible to slow the progression of the disease.

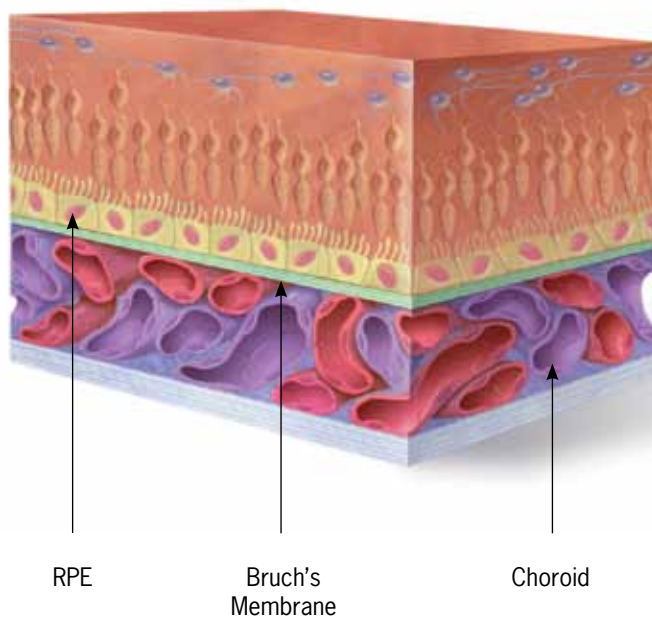


The following are risk factors that you can do something about:

- > Smoking
- > Diet: A diet low in antioxidant vitamins and minerals is a significant risk factor
- > Excessive sunlight exposure
- > High blood pressure
- > Excessive weight/obesity

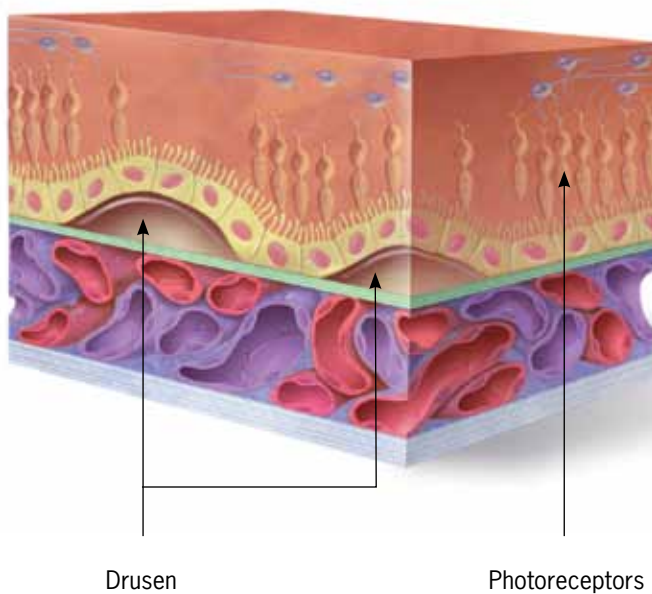
Obviously you can't change everything that puts you at risk, but wherever you can, consider making any lifestyle changes that will reduce your risk.

Normal Macula



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Macula with Drusen



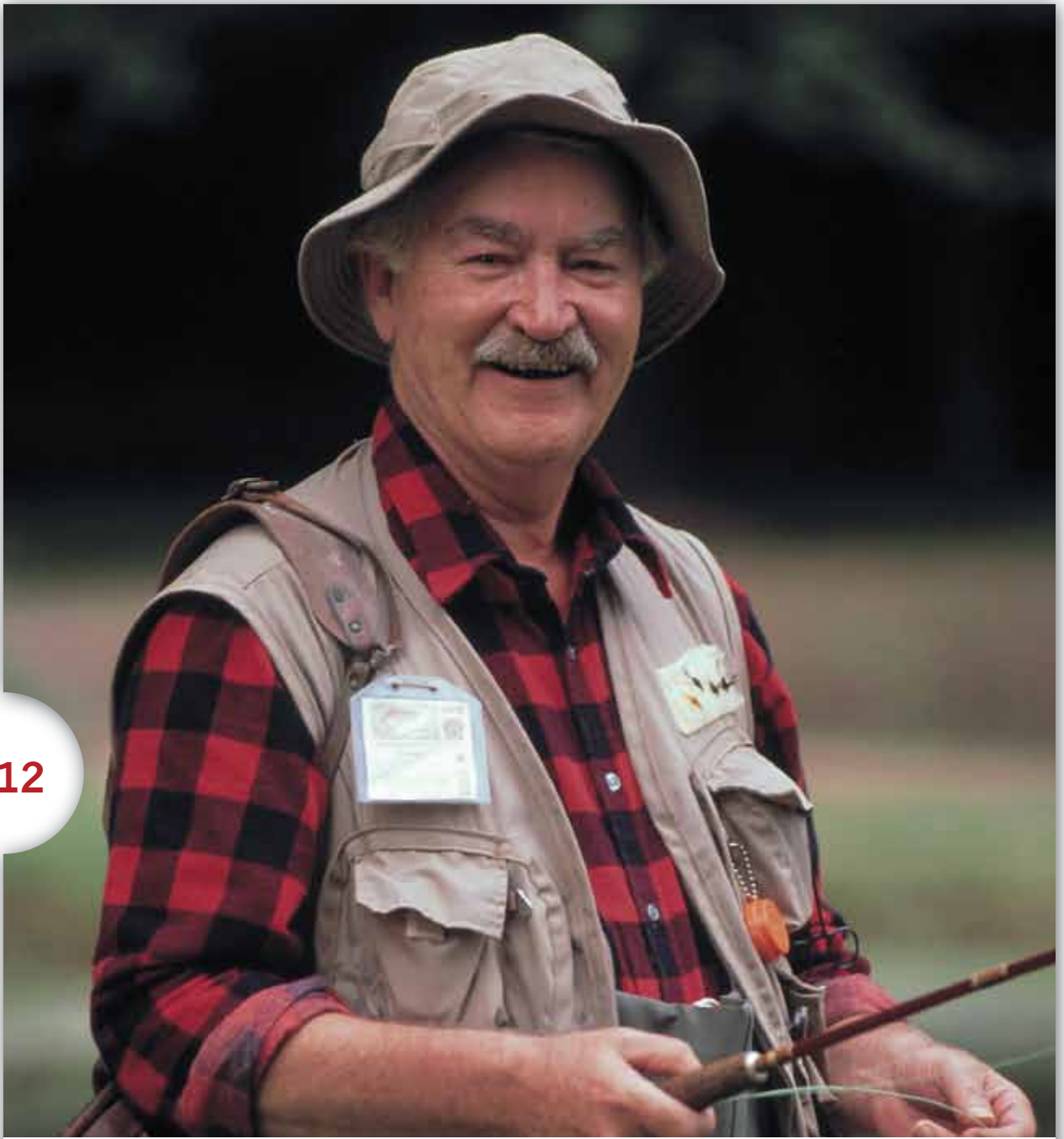
> Cross section of the macula normal (top) and with drusen (bottom)

What is Dry AMD?

Most of the time, AMD will begin as the less severe dry type and, for approximately 80% of people, it will remain that way. Dry AMD can develop in one eye or both.

The early stage of dry AMD usually begins with the appearance of drusen. Drusen are small white or yellowish deposits that begin to accumulate in one of the deepest layers of the retina due to a breakdown in its normal function. You will not be aware that these deposits are forming.

As the retinal layer continues to break down, an abnormal amount of drusen begins to build up. This build-up begins to disrupt the layers above it, eventually damaging the layer of photoreceptor cells (the cells that receive visual images from the lens), resulting in “blank” or blind spots in your central visual field.



> Regular visits to your eye doctor are critical for early detection and the preservation of your vision.



As dry AMD progresses from early to late stage, more cells break down and begin to waste away. At the same time, drusen continues to build up and eventually, additional, larger blind spots are formed.

As the disease continues to progress, the likelihood of it turning into the more severe wet AMD significantly increases as well. In fact, approximately 43% of people with advanced AMD in one eye may develop advanced AMD in their remaining good eye over 5 years.

With this type of prognosis, it's important to be proactive and do everything possible to slow the progression of the disease. Your eye doctor will work with you to develop a plan to do just that. What's most important is keeping all of your scheduled check-ups because monitoring the progress of AMD can be one of the best defenses against severe vision loss.

A woman with short dark hair, wearing a white cable-knit sweater, is looking out a window. The background shows a blurred view of a building and a blue sky. The number 14 is in a white circle on the left side.

14

> Specific high-dose ocular vitamin therapy has been shown to delay the progression of dry AMD and preserve vision.

Diagnosis of Dry AMD

Dry AMD might first be noticed during a routine eye examination by your eye doctor, or you might have made a special appointment because you noticed that something odd was happening to your vision. Either way, an official diagnosis of AMD should be left to an optometrist or ophthalmologist.

Since dry AMD develops quite slowly, it can affect the vision in your eye without you being aware of it. That's because your eyes and brain are very good at compensating for weakness. So if dry AMD is compromising vision in one eye, the good eye will adjust, making up for the other's deficiency. Regular visits to your eye doctor are critical for early detection and the preservation of your vision.

Treatment of Dry AMD

Treatment of dry AMD is focused on monitoring and slowing the progression of the disease. Your eye doctor may want to monitor your progress at specific intervals in his office, and you will also be told to monitor your vision at home with an Amsler Grid. You should also consider making any modifications to your lifestyle that will help to slow the progression of the disease. Your eye doctor will discuss all of these options with you.

Perhaps the most important thing you can do is heed your doctor's advice about vitamin supplements. Specific high-dose ocular vitamin therapy has been shown to delay the progression of dry AMD and preserve vision. By doing so, the chances of progression to wet AMD may also be reduced.

The Amsler Grid

The Amsler Grid is a useful and simple tool for monitoring your central vision. It's a test that you can do at home. Its regular use will alert you to any changes in your vision.

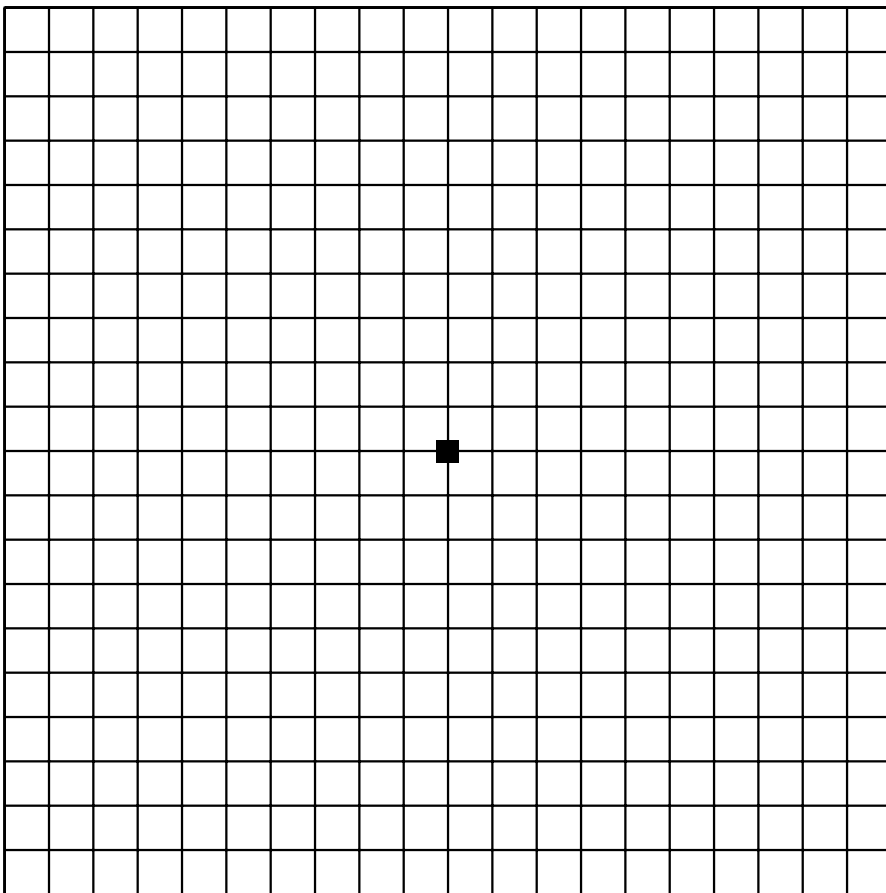
How to use an Amsler Grid (repeat for each eye):

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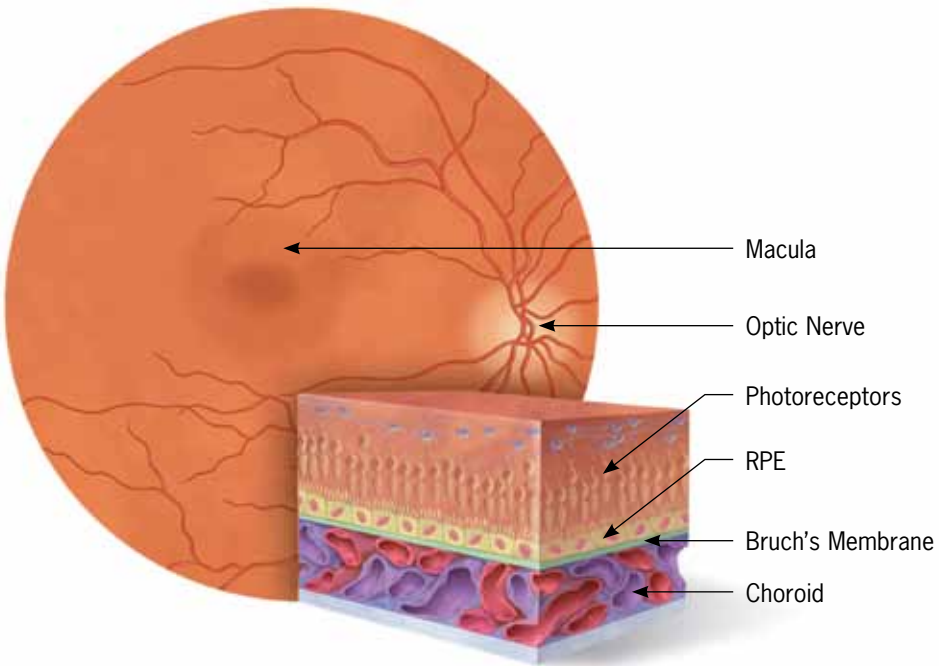
Note: if you wear reading glasses, be sure to have them on whenever you take this test.

1. Position the grid at a comfortable reading distance
2. Look at the centre dot on the grid with one eye at a time, covering the other eye with your hand
3. Make sure you stay focused on the centre dot

4. As you continue to look at the centre dot, check to see that all the surrounding lines are straight and all the squares are the same size
5. If any area on the grid appears blurred, distorted, discoloured or in any way abnormal or different from your last test, contact your eye doctor immediately

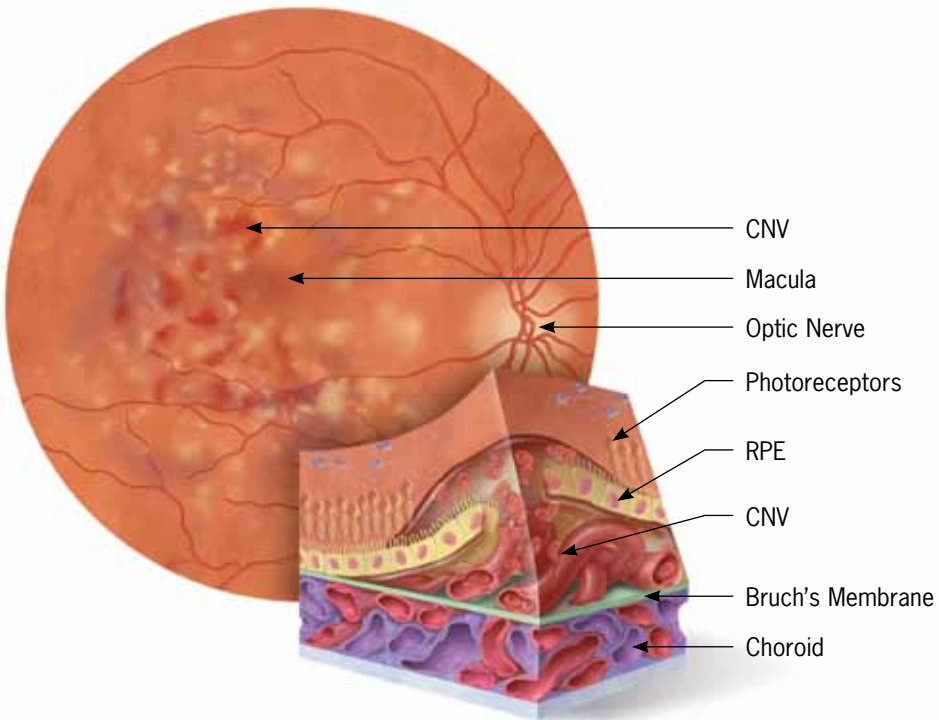


Normal Retina



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Wet AMD



> Image of retina with corresponding cross-section of the macula.

What is Wet AMD?

Wet AMD is so named because of the involvement of blood in the deepest layers of the retina. In a process called choroidal neovascularization (CNV), new and abnormal blood vessels spontaneously begin to grow beneath the retina and push their way up through it. Imagine they're like tree roots or weeds growing up through cracks in the pavement. Being weak and abnormal, these new vessels leak their contents of blood and fluid into the retina which separates and lifts up the other layers like a blister. This process finally disrupts the photoreceptors (the cells that receive visual images from the lens), leaving them unable to transmit visual signals to the brain. This results in "blank" or blind spots in the central visual field.

Left alone, this process eventually results in the growth of scar tissue which, in turn, causes severe and permanent central vision loss. Perhaps surprisingly, there is no pain associated with the entire process.

Although wet AMD can occur spontaneously, it's usually preceded by dry AMD, which makes regular check-ups especially important.

> Wet AMD is more aggressive than dry AMD and does not occur as frequently, accounting for approximately 20% of all AMD cases.

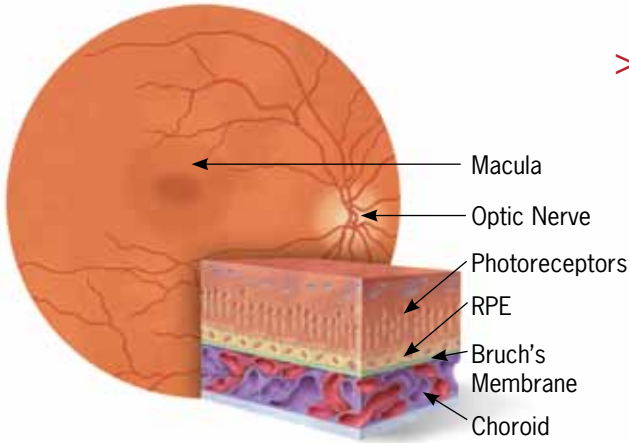
Wet AMD is more aggressive than dry AMD and does not occur as frequently, accounting for approximately 20% of all AMD cases. It can cause rapid, severe and permanent central vision loss in a matter of weeks. Early detection is critical in order to start any treatments that might help preserve your vision.

What are the Symptoms of Wet AMD?

- > Blurred vision
- > Straight lines appear wavy or distorted (metamorphopsia)
- > Blank spots in central vision (scotoma)
- > Any combination of the above

You will probably be the first person to detect the onset of wet AMD when you notice that your vision has suddenly changed. If you already have dry AMD, you might first notice a change on your Amsler Grid test. If you're not aware that you have any kind of AMD, your vision might suddenly blur, you may see a blank spot in your visual field, or things that should be straight appear bent or wavy.

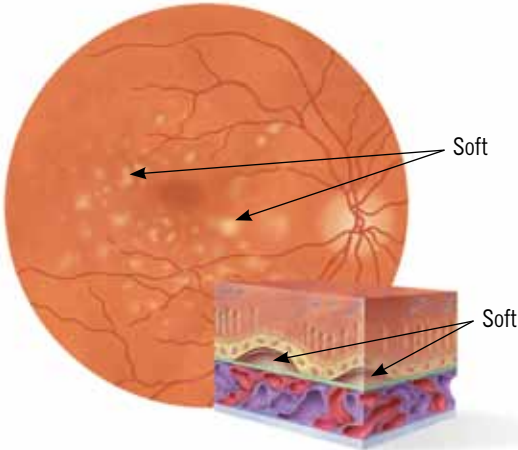
Normal Retina



> Vision Simulation (Normal)



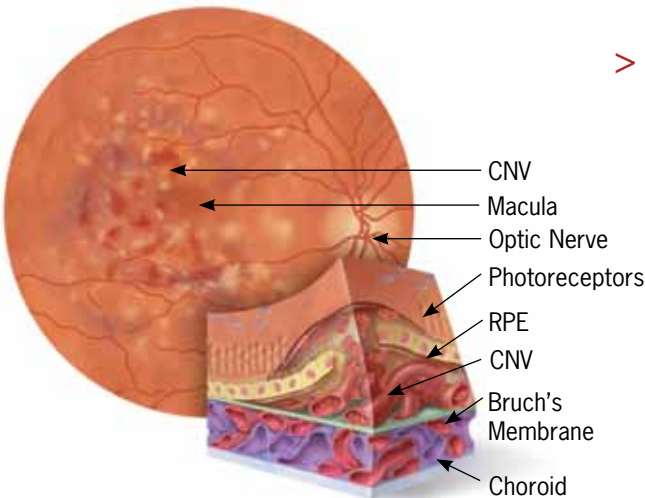
Retina with Drusen



> Vision Simulation with Dry AMD



Retina with Wet



> Vision Simulation with Wet AMD



Contrast Sensitivity

Often accompanying the distortion and vision loss is a decrease in contrast sensitivity, which is the inability to distinguish dark from light as pictured. A loss of colour perception is also part of AMD.

> Simulation de
la vision normale



> Simulation of low
contrast vision



Will I Lose My Vision Completely?

No. However the eventual outcome of untreated wet AMD can be severe and permanent central vision loss, with vision dropping to legal blindness or lower. In AMD, total blindness or darkness almost never occurs because the disease does not affect the entire retina, just the central macula. So while someone with AMD may experience extremely poor vision in their central visual field, their peripheral vision is not impaired.

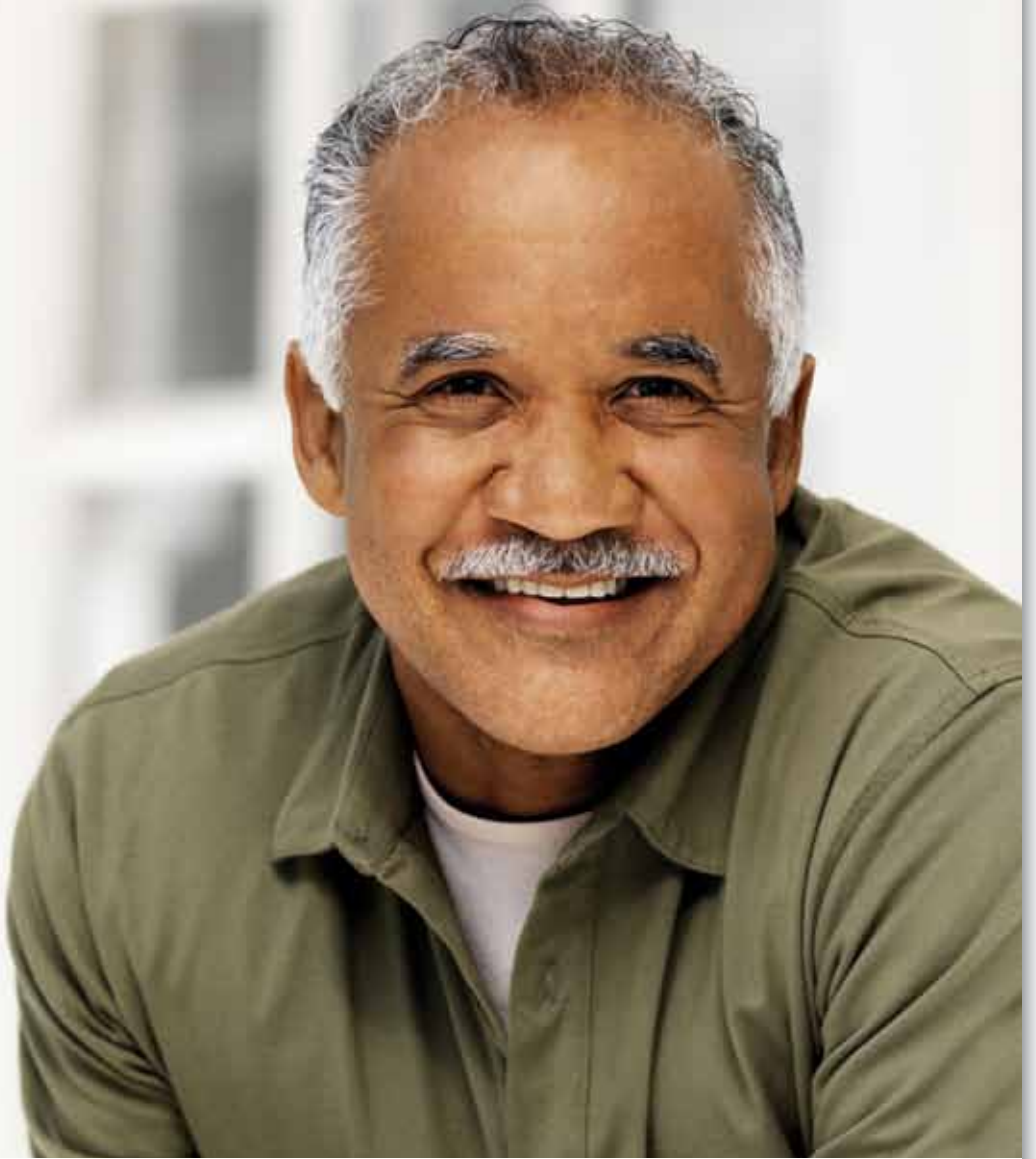
How Fast Does it Progress?

Unlike dry AMD which progresses relatively slowly and may go unnoticed for years, wet AMD is more aggressive and can cause severe vision loss in a matter of weeks or months. The speed at which wet AMD progresses is dependant on a variety of factors. And once you have wet AMD in one eye, the chances of it developing in your other eye are significantly increased.

How is it Diagnosed?

Only an AMD specialist, such as a retinal specialist, can make a definitive diagnosis; however your regular eye doctor can usually detect the presence of wet AMD based on your symptoms, medical history and a basic eye exam including a dilated retinal exam. That's why regular eye exams are important because early diagnosis gives you a better chance at preserving more of your vision.

If your regular eye doctor suspects wet AMD, you will be referred to a specialist. There, you will most likely undergo a dilated retinal exam followed by Intravenous Fluorescein Angiography (IVFA), a series of specialized photographs of your macula. These photographs will show what types of changes have occurred at the back of your eye. Based on these pictures, your specialist will recommend a specific course of action.



> **Treatment of AMD is a process involving you, your eye doctor and your AMD specialist working together.**



How is wet AMD treated?

You and your specialist will determine which treatment is best for you. There are three main treatment options. In some cases, your specialist may even recommend a combination of the available treatments:

Laser Photocoagulation: This wet AMD treatment, which was introduced many years ago, involves aiming a hot laser at the abnormal blood vessels in the eye. This action seals them and stops the leakage.

Photodynamic Therapy (PDT): PDT involves an intravenous drug and a cool laser to seal the leaking blood vessels. It works by sealing abnormal blood vessels in the back of the eye.

Anti-VEGF Therapy: Anti-VEGF stands for Anti-Vascular Endothelial Growth Factor. VEGF is thought to be a trigger for the growth of the abnormal blood vessels in the macula. Anti-VEGF drugs, that have been developed specifically for use in the eye, help prevent this from happening.

Because wet AMD is a chronic disease, constant monitoring of your progress is essential. That means doing your Amsler Grid tests as directed and keeping all scheduled appointments, whether for a check-up or additional treatments.



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> Improve your diet – include more fresh fruits and vegetables, especially dark green leafy vegetables like spinach.



It's Your Vision – Hold on to it

Your vision is precious – do whatever is in your control to hold on to it. There are specific things you can do that may help to delay it:

- > Visit your eye doctor or AMD specialist regularly – do not miss any scheduled appointments
- > Take the specific ocular vitamin supplements if recommended by your eye doctor
- > If you notice a change in your vision or your Amsler Grid test, contact your eye doctor immediately
- > Stop smoking – ask for help if you need it
- > Improve your diet – include more fresh fruits and vegetables, especially dark green leafy vegetables like spinach
- > Maintain a healthy body weight
- > Avoid excessive exposure to direct sunlight – wear sunglasses and wide-brimmed hats to protect your eyes from UV light
- > Keep high blood pressure under control
- > Be proactive about vision rehabilitation and the use of visual aids

Living with AMD

A diagnosis of AMD does not mean an automatic sentence to a life of blindness, however the disease can have a profound effect on your quality of life. A significant loss of central vision can severely impact your ability to function as before, making things you've always taken for granted such as reading, driving, and watching television, extremely difficult. But, since your peripheral vision is not directly affected by AMD, you should still be able to function independently with the help of visual aids and rehabilitation.

One of the most difficult things to overcome however is the emotional toll that vision loss takes. On first diagnosis, people can experience a range of emotions including shock, disbelief, denial, resentment, anger, rage, sadness, and loss. Most people also go through a period of depression, which, unchecked, can lead to even more problems than just coping with vision loss. Ask for help if you need it. Your loved ones, family, friends and even others with AMD are there to help you.

Learning to carry on in new ways is the key. People who learn to adapt so they can continue to do things they love, fare much better. For example, if reading is your passion, you can adapt by using a magnifier or listening to audio books which allows for continued independence and confidence.

The CNIB or other low vision specialists can help you cope with your vision loss. Both specialists and the CNIB can offer various vision enhancement devices and tips, as well as vision rehabilitation counseling, peer support and other services to help make the most of your remaining vision and increase your independence.

Low vision rehabilitation and a solid support network of family, friends, AMD support groups, and organizations like the CNIB can all help you cope with vision loss.



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> People who learn to adapt so they can continue to do the things they love, fare much better.



AMD Resources

Additional AMD and support information can be found through the following resources:

AMD Alliance International

Tel.: 1-877-AMD-7171

www.amdalliance.org

Association québécoise de la dégénérescence maculaire (AQDM)

Tel.: 1-866-867-9389

www.aqdm.org

CNIB

Tel.: 1-800-563-2642

www.cnib.ca

Canadian Ophthalmological Society (COS)

www.eyesite.ca

Foundation Fighting Blindness Canada

Tel.: 1-800-461-3331

www.ffb.ca

The Canadian Association Of Optometrists (CAO)

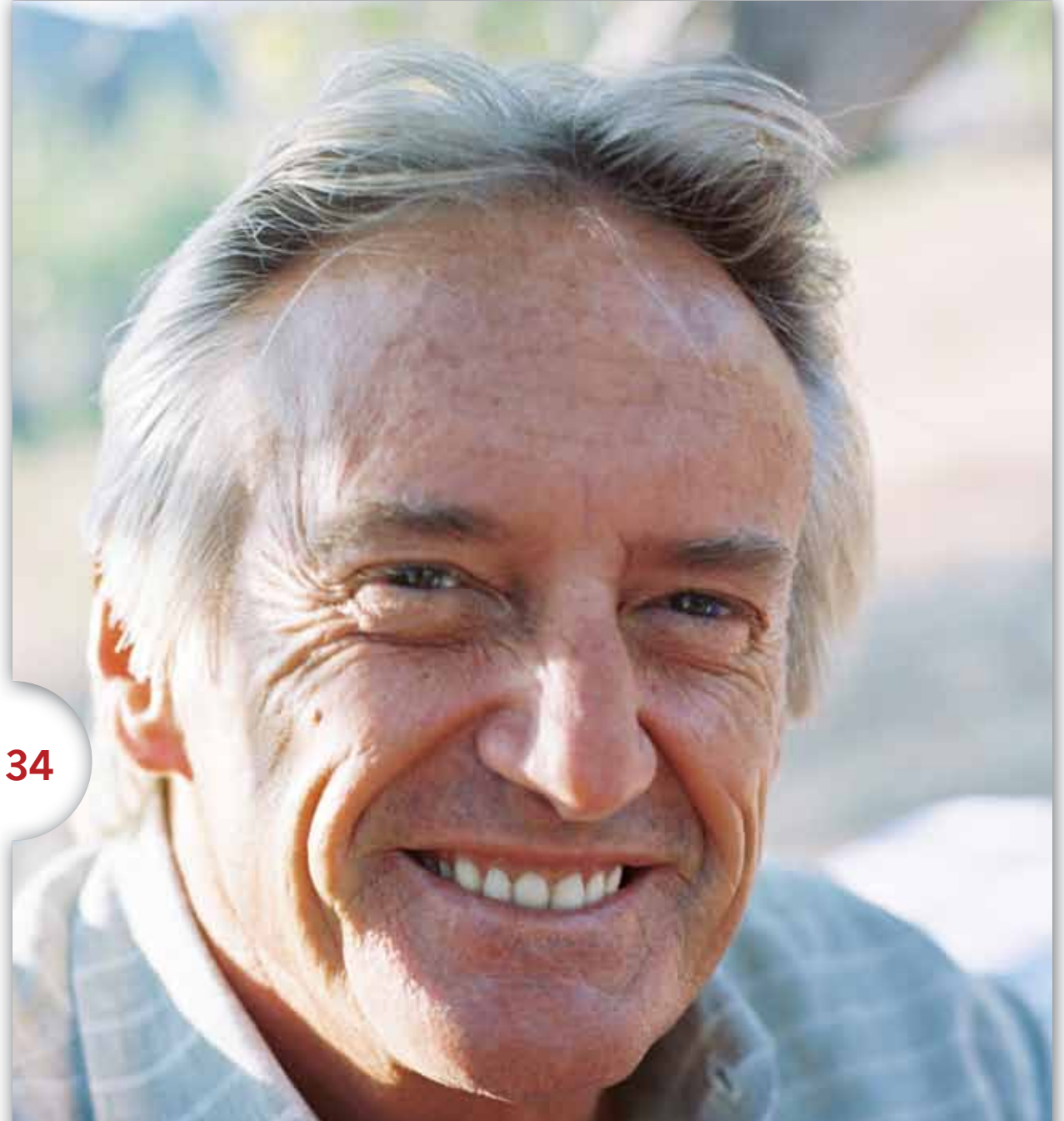
Tel.: 1-888-263-4676

www.opto.ca

The National Coalition for Vision Health

Tel.: 416-480-5091

www.visionhealth.ca



> Specialists, the CNIB and other services can offer various vision enhancement devices and tips, as well as vision rehabilitation counseling.

Glossary of Common AMD Terms

Antioxidants

Antioxidant nutrients are vitamins and minerals that help to prevent the destructive effects of oxidation in the body. Antioxidants are derived through diet and can be found in the foods that we eat, especially fruits and vegetables.

Atrophic AMD

Refers to dry AMD.

Carotenoids

The red, yellow, and orange pigments found in yellow-orange fruits and vegetables and dark green, leafy vegetables.

Choroidal Neovascularization (CNV)

Refers to the growth of new blood vessels under the retina. The key feature of wet AMD.

Drusen

Small deposits that accumulate under the retina. Usually a precursor to dry AMD.

Fluorescein Angiography

Special photographs of the retina that enables diagnosis of AMD and other diseases.

Legal Blindness

“A person shall be considered legally blind whose central acuity does not exceed 20/200 in the better eye with correcting lenses...” (“Legal Blindness” as defined in Blind Persons Regulations, Consolidated Regulations of Canada 1978, Chapter 371).

Low Vision

Low vision is the term given to the state of having less than normal vision or a visual disability. There are no specific visual acuity measurements that define it.

Lutein

Lutein is a yellow carotenoid pigment found in fruits and vegetables, primarily in dark green leafy vegetables like spinach. Lutein makes up the bulk of the pigment contained in the macula.

Macula

The small, central area of the retina responsible for fine detailed vision and the area affected by AMD.

Peripheral Vision

The area of vision that is not directly in front of you; your side vision.

Photoreceptors

These are actually nerve endings in both the retina and macula that absorb incoming light. They have the ability to transform it into electrical energy and then transmit it to the brain where they are registered as images.

Retina

The retina lines the back of your eye and acts like the film in a camera. It is a thin, multi-layered tissue that covers about two-thirds of the eye's inner wall and contains millions of photoreceptors.



> A solid support network of family, friends, AMD peer groups and organizations can all help you cope with vision loss.



For more information call:

1-800-363-8883



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