



# Ophthalmology Update

Richmond Eye Associates, P.C.

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## Ophthalmic Topics of Interest to the Medical Physician

### Update from the November 2001 Meeting of the American Academy of Ophthalmology

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#### **Ophthalmology Update:**

#### **The Mystery of Uveitis**

- Hallmarks of Ocular Inflammation
- Associated Systemic Disorders
- Lab testing and Treatment Strategies

### Antioxidants and Zinc Protect Eyes with Macular Degeneration

(Archives of Ophthalmology 2001;119:1417-1436)

The Age-Related Eye Disease Study (AREDS) is an ongoing multicenter, double masked clinical trial looking at the potentially beneficial effects of vitamins and antioxidants in preventing age-related eye disorders. Age-Related Macular Degeneration (AMD) and cataract are leading causes of visual impairment and blindness in the United States. Many use nutritional supplementation with the hope of preventing vision loss from these disorders, but a definite clinical benefit has been difficult to prove.

The initial results of AREDS, presented in November 2001 at the Academy of Ophthalmology's Annual Meeting, show significant evidence that antioxidants and zinc are protective in eyes at high risk of visual loss from AMD. In the study, 4656 participants between the ages of 55 and 80 were randomized to receive supplemental antioxidants, zinc, both antioxidants and zinc, or placebo. Average follow-up time was 6 years, with only 2% lost to follow-up.

The participants were divided into four groups based on their risk for developing AMD and on the appearance of the retina at the time of inclusion into the study. One group had little or no risk of AMD, the second had "early AMD", the third had

"intermediate AMD", and the fourth had "advanced AMD". In the advanced group, one eye had either lost vision, or had been surgically treated for macular degeneration.

The groups with no AMD, or early AMD showed very little risk of progression whether or not supplements were used.

However, the intermediate and advanced groups showed significant protection from vision loss from AMD with both antioxidant and zinc use over the 6 year period.

Over an average follow-up time of 5 years,

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#### **AREDS Antioxidant and Zinc Formulation**

**Vitamin C 500 mg**

**Vitamin E 400 IU**

**Beta Carotene 15 mg**

**Zinc (zinc oxide) 80 mg**

**Copper (cupric oxide) 2 mg**

### **Medicare Initiates the Glaucoma Detection Act**

Through extensive efforts by the American Academy of Ophthalmology and other groups, Congress passed the Medicare Glaucoma Detection Act, taking effect Jan. 1, 2002. This is the first ophthalmic screening benefit reimbursable by Medicare. Historically, Medicare (and most other insurances) have not covered screening eye examina-

tions, or routine eye examinations when the patient does not present with a chief complaint or known problem.

Glaucoma often gives not symptoms until significant irreversible vision loss has already occurred. A recent study<sup>1</sup> looked at the

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## Medicare’s Glaucoma Screening Benefit (page 1)

prevalence of glaucoma in 4744 rural and urban individuals, and found that 60% of probable and definite glaucoma cases were undiagnosed prior to the study. The overall prevalence of possible glaucoma was 1.2%. The Medicare Glaucoma Detection Act allows individuals with certain defined risk factors to have a glaucoma screening examination annually. The risk factors making an individual eligible for the examination include:

- Individuals with a family history of glaucoma (blood parents, brothers, sisters, etc.)
- Individuals with diabetes (either diet controlled, oral agents, or insulin dependent.)
- African-Americans over the age of 50 and eligible for Medicare.

The glaucoma screening examination includes measurement of visual acuity and intraocular pressure, slit lamp examination of the

eye, and a dilated examination of the optic disc. If additional tests are needed, such as visual field testing, they are scheduled for a separate day. Medicare deductibles and copays still apply.

### EyeCare America Glaucoma Project

Virginia is one of two states involved in a pilot project designed to spread the word on glaucoma detection and treatment. Volunteer ophthalmologists are asked to see patients participating in this project at no out-of-pocket expense to the patient. Interested individuals call 1-800-391-EYES and are screened for glaucoma risk factors. They are then matched with a volunteer ophthalmologist in their area. The physicians of Richmond Eye Associates are participating in this project, which is separate from the Medicare Glaucoma Detection Benefit.

<sup>1</sup>Weih, et al. Ophthalmology 2001;108;1966-72.

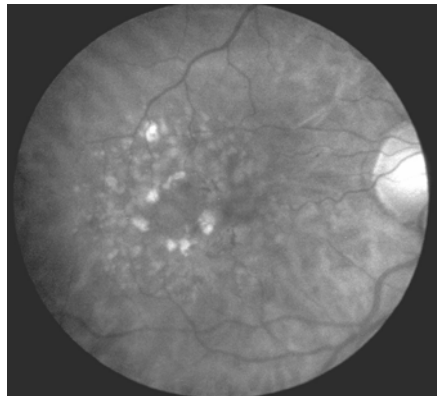
## Clinical Pearl: Recognizing Age Related Macular Degeneration

Age related Macular Degeneration (AMD) is a common cause of permanent and severe loss of vision in adults. Some hallmarks of the disorder include:

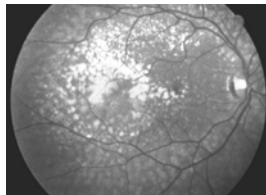
- AMD has an increasing incidence after age 50.
- AMD affects Caucasians much more frequently than other races.
- Tobacco use, hypertension, and a positive family history are strong risk factors for the disorder.
- It is painless, and causes no physical symptoms (only visual symptoms).
- It initially causes distortion in the vision, where a straight line would appear crooked. It progresses to a blind spot in or near the central vision. It may present with a sudden loss of vision in one eye. It does not usually cause an afferent pupillary defect.



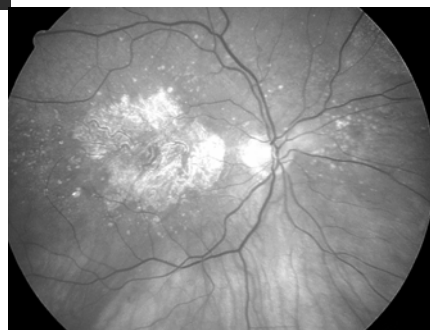
**Normal Macula / Optic Nerve**



**Above - Early Yellowish Deposits in Macula Near Optic Nerve (Drusen)**



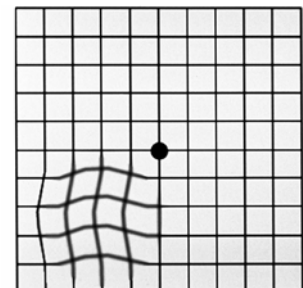
**Above - Extensive Macular Drusen of AMD (Vision may still be good)**



**Right - Scarring of the Macula from Advanced AMD (legally blind)**



**Image Distortion Above and on Amsler Grid Below from Early AMD**



## Antioxidants and Zinc are Protective in AMD (from page 1)

untreated (placebo) individuals in the “moderate AMD” risk group had an **18% risk of progressing** to “advanced AMD”. Those in the “advanced AMD” group (who had already lost vision in one eye) had a **43% chance of progressing** to “advanced AMD” in the fellow eye.

Overall, untreated individuals in the “moderate” and “advanced” groups had a 29% chance of significant vision loss by 5 years. The beneficial effects of the use of antioxidants and/or zinc are shown below:

<b>AREDS RESULTS</b>	<b>Placebo</b>	<b>Antioxidants</b>	<b>Zinc</b>	<b>Antioxidants plus Zinc</b>
<b>Visual Loss Risk (AMD)</b>	<b>29%</b>	<b>26%</b>	<b>25%</b>	<b>23%</b>
<b>% Reduction in Risk</b>	<b>N/A</b>	<b>10%</b>	<b>14%</b>	<b>21%</b>

The trend in risk reversal with usage of antioxidants, zinc, or both combined showed an even stronger benefit in those individuals who had used the supplements for 7 years in the study. Blood levels of the supplemental nutrients were found higher at year one. There was no evidence of copper deficiency, which sometimes develops with zinc supplementation (the supplement provided had a copper supplement to prevent this complication).

### Recommendations (from this study and others):

- **Individuals should have a comprehensive eye examination by an ophthalmologist to determine their risk for AMD.**
- **If moderate or high risk is found, use of the nutritional supplement in this study should be considered, unless contraindicated.**
- **Discontinue tobacco use, and wear UV eye protection.**
- **Consider leafy green vegetables high in Lutein.**
- **Monitor vision with an Amsler Grid, report vision changes immediately, and get regular eye examinations.**

### Antioxidants and Zinc Were NOT Protective Against Cataract

Based on the results of 4629 patients, the antioxidants used in this study gave no protective effects in the development or worsening of cataract. The study population overlapped with the AMD arm of the study. Opacities in the lens of the eye were graded over the 5 to 7 years of the study, and overall there was a 40% risk of worsening cataract by 7 years, with or without antioxidant use.

### Risks, Complications, and Side Effects

There were minimal complications from the use of the supplements in this study. In addition to the placebo or supplements given, 67% of the study participants elected to take a Centrum multivitamin a day as well. There was an increased reporting of skin yellowing in the groups taking beta carotene. Beta carotene was not offered to tobacco users, due to evidence of increased risk of lung cancer in smokers taking beta carotene. There was an increased rate of hospitalizations for genitourinary problems in men and women in the zinc group. Known possible complications of the supplement use include:

- Vitamin C - increased risk of kidney stones.
- Vitamin E - increased risk of fatigue, muscle weakness, decreased thyroid function, increased hemorrhagic stroke risk.
- Beta-carotene - yellow skin, increased risk of lung cancer in smokers (beta carotene was not given in tobacco users.)
- Zinc - anemia, decreased HDL cholesterol, GI upset.

## Restoring Near Vision as Well as Distance Vision After Cataract Surgery

Cataract surgery is the most commonly performed outpatient surgical procedure in the United States, and the demand for this procedure will continue to increase over the next 20 years as an increasing number of people in the population develop cataract. The primary goal of cataract surgery with an intraocular lens implant is to restore distance vision, with a secondary goal being to reduce the dependence on glasses for distance vision. Unless the patient is nearsighted after the procedure, reading glasses are required for any type of close work or reading.

However, another option is available for patients who desire useful vision both at near and at distance after surgery: the **Allergan Array Multifocal lens implant**. This FDA approved implant uses concentric bands of power within the implant to give excellent distance vision, as well as good reading and intermediate range vision. For small print, reading glasses may be required, but for many

every day situations requiring near vision, no lenses may be needed for many patients.

The results of an ongoing randomized study<sup>1</sup> looking at functional abilities (activities of daily living) after either implantation with the multifocal lens, or with a traditional lens implant were recently reported. In this study, which ultimately will enroll 100 patients, 65 patients have been implanted with one type of lens or the other at the time of cataract surgery. A standardized questionnaire was given prior to, and after, surgery (the VF-7), which assesses difficulties associated with activities of daily living. These activities include driving at night, reading small print, watching television, seeing steps, reading traffic signs, cooking, and performing close hand work.

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- Extensive patient information, including discussion of over 80 eye conditions and a section discussing risks and benefits of laser vision correction.
- Interactive Clinical Section concerning eye disease and physical findings
- Clinical Trials Database

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*Ophthalmology Update*

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**The Array Multifocal Lens Implant after Cataract Surgery (page 3)**

The study results thus far indicate similar distance visual acuity between both types of implants, with or without glasses correction. However, the reading visual acuity was significantly better in patients implanted with the multifocal lens. The average multifocal patient was able to read normal sized print post-operatively without glasses, while the monofocal patient could hardly read capital letters.

Most importantly, the VF-7 scores were significantly better in the multifocal group, with the patients implanted with the multifocal lens indicating a reduced dependence on glasses to carry out activities of daily living. Thus, their level of satisfaction was higher after surgery than the monofocal group, in spite of both groups having recovery of distance vision after cataract surgery.

**Being a Good Candidate for the Multifocal Lens Implant:**

Candidates for the Array Multifocal Lens should have visually significant cataract, with **both** eyes needing surgery. The way that the multifocal lens restores near vision is not readily compatible with that of traditional lens implants, or with the natural lens of the eye. Thus, patients implanted with the multifocal lens in just one eye do not gain the visual benefits until the second eye is implanted.

One drawback of the multifocal lens is the appearance of a halo or a "glow" around lights at night. This is more pronounced when only one eye has been implanted. This effect seems to diminish with time, and usually is not significant by three months after bilateral surgery. However, in patients with intensive night

vision requirements, a traditional implant may be preferred.

Patients should have a high degree of motivation to see both at near and distance after the surgery, and be willing to accept that there will be an adjustment period after surgery. Usually, for example, when a person has difficulty seeing small print, he increases the lighting. However, with the multifocal implant, increasing the lighting can make the pupil so small that the concentric rings of power are obscured, and reading will actually become worse.

Prior to surgery, the eyes should be free of other disorders such as macular degeneration, diabetic retinopathy, and high degrees of astigmatism, as these conditions may nullify the benefits of using the implant.

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<sup>1</sup>Uusitalo, MD. Ocular Surgery News 12/1/2001:11.

**Scleral Band Surgery Fails to Correct the Need for Reading Glasses (presbyopia)**

On a different front, the placement of scleral loops around the eye to expand the eye and restore focusing ability has failed. A French study<sup>2</sup> indicated inconsistent, and at best, temporary restoring of near focusing after surgery. Furthermore, there were cases of ocular discomfort and extrusion of the scleral bands post-operatively. Six patients were followed over the course of a year to assess the effectiveness and complications of the procedure. The researchers did not recommend that the scleral expansion surgery be used for the correction of presbyopia.

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<sup>2</sup>Malecaze, et al. Ophthalmology 2001;108:2165-2171.