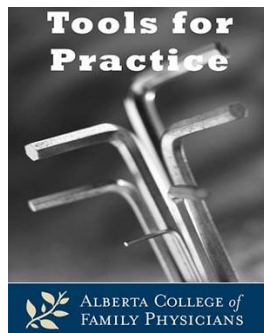


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**Reviewed: August 10, 2016**  
**Evidence Updated: New evidence**  
**Bottom Line: Minor change**  
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## **Vitamins for Age-Related Macular Degeneration (AMD) Demonstrates Minimal Differences**

**Clinical Question: Do ocular vitamins and minerals decrease the progression of AMD?**

**Bottom Line: Ocular vitamins slow visual loss only in AMD patients with intermediate or greater retinal findings, reducing progression in one in 17 patients over six years. The risk of advanced AMD is rare in patients with minimal AMD, and ocular vitamins do not prevent AMD in those without AMD. Components of ocular vitamins are potentially harmful and should be used only in selective patients.**

### **Evidence:**

AREDS:<sup>1</sup> Randomized Controlled Trial (RCT) of 4757 patients with AMD examined antioxidants (vitamin C 500 mg, vitamin E 400 IU, and beta-carotene 15 mg), zinc oxide 80 mg, both, or placebo over 6.3 years:

- Classified on baseline retinal photography: Category 1 (minimal) to 4 (advanced).
- 15-letter visual acuity loss:
  - Category 2,3,4 patients: No significant improvement in any intervention.
  - Category 3,4 patients: Statistically significantly reduced visual loss for antioxidants + zinc (23%) versus placebo (29%), Number Needed to Treat (NNT)=17.
- Progression to advanced AMD (predominantly neovascularization).
  - Category 3,4 patients: Statistically significantly reduced progression with zinc (NNT=17), and antioxidants + zinc (NNT=13).
- Limitations: Category 1 patients (23% of sample) excluded, selective reporting, adjustments made for baseline characteristics, industry-supported.

Inconsistent results in shorter/smaller studies.<sup>2</sup>

AREDS2:<sup>3</sup> RCT of 4203 patients with AMD randomized to AREDS re-formulation over 4.9 years:

- Added: Lutein + zeaxanthin, omega-3 fatty acids, both, or placebo.

- Changed: Original AREDS formulation, removal of beta-carotene, zinc oxide dose reduced to 25 mg, or both.
- Outcomes:
  - No difference between any group in visual acuity loss or progression to advanced AMD.
  - Statistically significantly lower lung cancer risk with removal of beta-carotene (0.9%) versus keeping beta-carotene (2.0%).

**Context:**

- AMD is a common cause of visual loss in developed countries.<sup>4,5</sup>
- Neovascular AMD accounts for >80% of AMD visual loss, but <15% become neovascular (<1% category 1 or 2 patients).<sup>1,6</sup>
- AMD risk factors: White, advanced age, smoking, obesity, and family history.<sup>6-9</sup>
- In patients without AMD:
  - Vitamin E or beta-carotene do not prevent AMD.<sup>10,11</sup>
  - Canadian retina specialists recommend taking original AREDS formulation.<sup>12</sup>
- Antioxidants (including beta-carotene) increase adverse events, including mortality (relative risk 1.04, 1.01-1.07).<sup>13</sup>

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