Lutein and antioxidant vitamins for prevention of age-related macular degeneration (AMD) (DROP-List)

This is one of a number of bulletins providing further information on medicines contained in the PrescQIPP DROP-List (Drugs to Review for Optimised Prescribing). This bulletin focuses on lutein and antioxidant vitamins to prevent age-related macular degeneration (AMD) progression and provides the rationale for discontinuing supply on NHS FP10 prescriptions. Further bulletins, including the DROP-List, are available on the PrescQIPP website: www.prescqipp.info

Recommendations

- Review all patients on lutein and antioxidant vitamins.
- Discontinue prescribing of lutein and antioxidant vitamins on FP10 and do not initiate new prescriptions. Inform patients and provide a patient information leaflet.
- Recommend eating a healthy, well balanced diet including oily fish, fruits and vegetables. There are fruits and vegetables of various colours that supply vitamins, lutein and zeaxanthin.
- Supplementation, if desired, should be obtained by purchasing products over the counter. The products are not licensed medicines (have not undergone regulatory assessment) and are classed as food supplements.
- Lutein and antioxidant vitamins are not suitable for some groups of patients, i.e. beta carotene has been found to increase the risk of lung cancer in smokers.

Background

The PrescQIPP DROP-List is an accumulation of medicines that are regarded as low priority, poor value for money or medicines for which there are safer alternatives. There are also medicines which could be considered for self care with the support of the community pharmacist included on the DROP-List. Lutein and antioxidant vitamins features on the DROP-List as an item which has limited clinical value, is suitable for self care and should be purchased over the counter if a patient wishes to use a supplement.

Approximately £1.6 million could be saved annually in England by discontinuing prescribing of lutein and antioxidant vitamins (ePACT July to September 2014). As with all prescribing, individual patient circumstances need to be borne in mind, however, with assistance from practice nurses, support from your local CCG medicines management teams and the experiences of CCGs/GPs that have already undertaken this work, it is hoped that GPs will participate in realising the cost savings.

Rationale for discontinuation of prescribing lutein and antioxidant vitamins

The concept of using antioxidant vitamins to reduce the progression for AMD initially came from a single study in the US which suggested supplementation would benefit patients. Single studies should not be looked at in isolation and results should be repeatable in further studies before conclusions are drawn about benefits of particular treatments. Further studies were done looking at the potential benefits
of vitamins in reducing the progression to AMD. However, the potential benefits seen in the original study were not repeated in subsequent studies as vitamins did not further reduce risk of progression to advanced AMD.

The initial study, The Age-Related Eye Disease Study (AREDS) suggested that daily oral supplementation with antioxidant vitamins and minerals reduced the likelihood of developing advanced AMD by 25% at five years in a well-nourished American population. Participants who initially had no AMD had less than a 1% chance of losing vision from AMD during the study. For those who initially had early AMD, the antioxidants and zinc used did not slow the disease’s progression to intermediate AMD. The original design of this study had several categories of patients for which the results would be pooled across all treatment groups. There was a low event rate which made it impossible to assess treatment effects for each category for the AMD outcome and less likely that any of the treatments would be beneficial. Therefore, analyses were also presented for those participants most likely to benefit from an effective treatment. The study was not originally set up to be analysed in this way. The study also concluded that treatment benefit was modest and participants in all treatment arms continued to progress to advanced AMD and lose vision over time.²

A second study, AREDS2 was designed to test whether adding carotenoids lutein and zeaxanthin or omega-3 long-chain polyunsaturated fatty acids (docosahexaenoic acid [DHA] and eicosapentaenoic acid [EPA]), or both, to the original AREDS formulation might further reduce the risk of progression to advanced AMD. The study concluded that the addition of any combination to the AREDS formulation in the primary analysis did not further reduce risk of progression to advanced AMD. A secondary goal was to test the effects of eliminating beta carotene and reducing zinc doses or both in the AREDS formulation. Comparison of low-dose zinc vs high-dose zinc in the study showed no evidence of a statistically significant effect, and there is insufficient evidence to provide a clinical recommendation.³

A Cochrane review recommends that as the AREDS findings were drawn from a trial in a relatively well nourished American population; it is not possible to apply the recommendations more generally until replicated by other large scale trials. It further says that harmful effects associated with long-term vitamin supplementation, particularly in smokers and people with vascular disease cannot be ruled out. The review included only two small trials on lutein and/or zeaxanthin, neither of which provided good evidence for the effectiveness of these supplements. This is supported by the findings of the AREDS2 study.⁴

Another Cochrane systematic review has assessed the use of commonly marketed antioxidant multivitamin combinations to prevent progression of AMD and concluded that there is little evidence to support their use.⁵

There is some concern that the high doses of vitamins and minerals needed may cause harm in some people. Beta-carotene has been found to increase the risk of lung cancer in smokers⁶ and these supplements are not advised in either ex-smokers or current smokers. Vitamin E has been linked with an increased risk of heart failure in people with diabetes or blood vascular disease.⁷ Zinc may increase the risk of developing bladder and kidney problems.³

While there is insufficient evidence to recommend lutein and zeaxanthin supplements, eating a healthy diet rich in oily fish, leafy green vegetables and fresh fruit is likely to improve concentrations of macular pigment in the fundus and is unlikely to do any harm.⁸

Around 78% of lutein and zeaxanthin is gained from eating vegetables particularly dark green leafy vegetables. Egg yolk and maize (corn) contain the highest amount of lutein and zeaxanthin (more than 85% of the total carotenoids). Maize contains the highest quantity of lutein (60% of total) and orange pepper contains the highest amount of zeaxanthin (37% of total). Substantial amounts of lutein and zeaxanthin (30–50%) are also present in kiwi fruit, grapes, spinach, kale, orange juice, courgette (zucchini) and different kinds of squash.⁹
Benefits to patients

- Provide patients with information which will allow them to understand that taking vitamins is unlikely to reduce the progression of AMD.
- Reducing unnecessary side effects associated with taking the vitamins.
- Savings made on reducing prescribing of ineffective treatments for AMD means that funding can be made available for effective treatments.

Costs

There is a significant cost of the products prescribed. Table 1 below illustrates the costs of Preservision® and Viteyes®, which have a formula that closely matches the original AREDS formula.

Other marketed products, e.g. ICaps®, contain similar constituents but either in different proportions, or with additional ingredients. None are licensed as medicines and therefore these products are classed as food supplements.

Table 1: Lutein and antioxidant vitamin product costs

<table>
<thead>
<tr>
<th>Product</th>
<th>Cost per 28 days</th>
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<tbody>
<tr>
<td>Occuvite Complete Capsules®</td>
<td>£14.25</td>
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<tr>
<td>Preservision Original®</td>
<td>£14.25</td>
</tr>
<tr>
<td>Preservision Lutein capsules®</td>
<td>£14.25</td>
</tr>
<tr>
<td>Viteyes Original Formula Plus Lutein®</td>
<td>£12.60</td>
</tr>
<tr>
<td>Viteyes Original®</td>
<td>£12.60</td>
</tr>
<tr>
<td>ICaps®</td>
<td>£10.94</td>
</tr>
<tr>
<td>Visionace Plus®</td>
<td>£7.63</td>
</tr>
<tr>
<td>Visionace Original®</td>
<td>£6.96</td>
</tr>
</tbody>
</table>

Savings

Discontinuing prescribing of lutein and antioxidant vitamins could release savings of up to **£1.6 million nationally. This equates to savings of £2,827 per 100,000 patients.**

Patients should be advised to eat a healthy diet containing oily fish, plenty of green leafy vegetables and fruits. Patients who wish to continue to take a supplement should be informed that supplements are available to purchase over the counter, however they are not suitable for all patients and the available evidence does not support their use. Further information on dietary intake is available from the British Nutrition Foundation,11 the Royal National Institute of Blind People (RNIB),12 the Macular Society13 and NHS Choices.14

References


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Additional PrescQIPP resources