<table>
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<tr>
<th>Author</th>
<th>Year</th>
<th>Study type</th>
<th>Population</th>
<th>Summary of Paper</th>
<th>Comments</th>
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<tr>
<td>Bandello et al. ‘Public health impact of neovascular age-related macular degeneration treatments extrapolated from visual acuity’</td>
<td>2007</td>
<td>Describes the design and use of a Markov model.</td>
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<td>Aims: To estimate the potential public health impact of treatment with new medications intended to preserve vision in patients with neovascular AMD.</td>
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<td>Methods:</td>
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<td>• A Markov model was used to simulate the natural history of AMD over the lifetime of patients with diagnosed neovascular AMD from clinical trials and epidemiologic surveys.</td>
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<td>• It was applied to a cohort of pts aged 75yrs, with newly diagnosed neovascular AMD in one eye, whose visual acuity was 0.7 logMAR.</td>
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<td>• Probabilities were calculated for the risk of AMD in the remaining eye and for premature mortality.</td>
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<td>Summary of Results: For AMD pts with a 50% probability of VA &gt; 1.0 logMAR at 1yr, in one eye, the probability of lifetime bilateral blindness was &gt; 47%. The pts would live approximately 7yrs with monocular vision &gt; 1.0 logMAR and an additional 4yrs with bilateral blindness and a &gt; 15% probability of depression due to AMD. Life expectancy was decreased by approximately 2 years, &gt; 90/1000 pts would sustain a new hip</td>
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<td>Have summarised main points, mostly from abstract. If group wish to review further, needs input from a statistician.</td>
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<td>Author(s)</td>
<td>Year</td>
<td>Study Design</td>
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<td>Aims</td>
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| Brody et al. ‘Age-related macular degeneration: self-management and reduction of depressive symptoms in a RCT’ | 2006 | Analysis of a subset of patients from an RCT | USA | Aims: To assess effectiveness of a self-management program for AMD in reducing depressive symptoms. | • Original study randomised 252 pts to self management program, tape-recorded health education program or wait list.  
• This paper focused on 32 depressed pts. They had been randomised to the AMD self-management program (n = 12) or one of the 2 control groups (n = 20).  
• AMD self-management program consisted of cognitive and behavioural elements including health education and sample was small and selected. Small numbers of participants in intervention and control groups were on antidepressants.  
3 of 3 of the pts in self-management group who were on antidepressants showed a clinically meaningful reduction in depressive symptoms, compared with 4 of 7 of the controls. |
enhancement of problem-solving skills.

- Primary outcome measure was GDS-15.

**Summary of Results:**
At 6mnth follow-up:
- change on the GDS-15 was greater in the self-management group than in controls ($P = 0.03$).
- self-management group also scored significantly better on self-efficacy ($P = 0.01$) and satisfaction with social support ($P = 0.03$).
- nonsignificant difference between self-management and control groups in change in visual functioning ($P = 0.21$) and dispositional optimism ($P = 0.23$).

**Author’s Conclusion:** May support the effectiveness of an AMD self-management program for depressed older adults with advanced vision loss from AMD.

| Brody et al. ‘Self-management of age-related macular degeneration at the 6-month follow-up.’ | 2005 | RCT | USA | 252 randomised, 214 completed follow-up. | Mean age 80.8yrs. 69 males, 145 females. | Aims: examination of the effects at the 6 month follow-up of the effectiveness of the AMD self-management program to improve participants’ mood (measured using the Profile of Mood States: POMS). | Methods: | Analysis not intention-to-treat. | Treatment assignments unknown to interviewer (but not subjects) | Change scores between tape-recording and control conditions |
AMD; visual acuity of 20/60 or worse in better eye and 20/100 or worse in other eye; no cognitive impairment.

- Interviews conducted at baseline and at 6 month follow-up by a clinical psychologist and trained research assistants. POMS was used to assess emotional distress.
- Secondary outcome measures included visual function, self efficacy and depression status.

### Summary of Results:
- Pts in self-management program showed reduced emotional distress on the POMS from baseline to 6mnth follow up ($P = 0.008$).
- Pts in self-management group also showed better visual functioning ($P = 0.05$) and increased self-efficacy ($P = 0.006$) from baseline to 6 month follow-up.
- Incidence of clinical depression at 6mnth follow-up was significantly lower in the self-management group ($P = 0.05$) than control.

| Burgraaff et al. 'Optometric and multidisciplinary approaches in prescribing low vision aids-revised’ | 2006 | Non-randomised prospective cohort study | Netherlands – pts recruited from 4 hospitals. Referred to low vision service by ophthalmologist, VA < 0.3 or visual field < 30%. | Aims: Looked at 2 widely used types of rehabilitation for visually impaired elderly in the Netherlands:  
- Optometric services: Most optometrists work in hospitals. Some employed through the hospital, and others work for a commercial firm.  
- Multidisciplinary services: Non-commercial organisations. Include optician (sometimes recording group and waiting list groups were not statistically significant, therefore collapsed into one control group. |
|---|---|---|---|---|

Part of a larger study on the outcome on QoL of visually impaired elderly of rehabilitation.  
Low vision aids included:  
Closed-circuit
N = 192, mean age 77.8%.

Main causes of visual impairment were ARMD (59.6%), diabetic retinopathy (15.8%), glaucoma (7.6%) and cataract (4.1%).

This study aimed to describe possible differences between the 2 services in the prescription of low vision aids.

**Methods:** 357 pts at baseline; 55% referred to optometric service, 45% referred to one of the 20 multidisciplinary services. After 1 year, only 215 pts (60.2%) were still participating in study. Only pt records of the optometric service in 1 hospital (N = 95, 49.5%) and records of the multidisciplinary service (N = 97, 50.8%) were used in analysis.

**Summary of Results:**
- Multidisciplinary services more frequently prescribed a single low vision aid/person (47.4%) than optometric services (26.3%; p = 0.002);
- Optometric services more often prescribed 2 or more low vision aids/person (71.3%) than multidisciplinary services (43.9%; p = 0.001).
- Similarity in prescribing low vision aids was found for most types. However, pts referred to optometric services received a higher percentage of telescopic devices (p < 0.001) and glare protective devices.
(p<0.001) than pts referred to multidisciplinary services. In contrast, pts referred to multidisciplinary services received a higher percentage of fluorescent lamps (p<0.001).

- Finally, were differences in types of low vision aids prescribed by the 2 services to pts with 3 difference levels of VA. In low-VA group, pts referred to multidisciplinary services were mostly only prescribed CCTVs. Pts referred to optometric services were also prescribed a relatively high number of other low vision aids.

**Authors Conclusion:** In the Netherlands, optometric services emphasize the optical part of low vision services, whereas multidisciplinary services have a broader perspective and also concentrate on non-optical needs.

| The Complications of age-related macular degeneration prevention trial (CAPT): rationale, design and methodology | 2004 | This paper details the design and methodology of the Complications of Age-Related Macular Degeneration Trial (CAPT). The CAPT is an RCT to evaluate whether prophylactic laser treatment to the retina can prevent the complications of the advanced stage of AMD. |
| Dandekar et al. ‘Does smoking influence the type of age related macular degeneration causing visual impairment’ | 2006 | Prospective, cross sectional study. | UK. 711 subjects, of western European origin. | **Aims:** Smoking is known to be a risk factor for AMD. This study aimed to analyse the influence of smoking on the type of AMD lesion causing visual impairment in a large cohort of pts with AMD at a tertiary referral centre.  

**Methods:** 711 pts at tertiary referral centre in UK. Retinal stereo-colour fundus photographs were taken, and were graded to establish the type of AMD in each eye (neovascular or non-neovascular). A full smoking history was taken from each subject.  

**Summary of Results:**  
- 578 subjects graded as neovascular AMD, and 133 with non-neovascular AMD.  
- 14% of neovascular group compared to 8% of non-neovascular group were current smokers, but the difference was not statistically significant (P = 0.09).  
- No statistically significant association found between smoking status or increasing number of pack years and type of AMD lesion.  

**Authors Conclusion:** smokers are at equal risk of developing either neovascular or atrophic lesions. | Selection bias – pts seen at a tertiary referral centre.  
Subject-reported smoking data, and subjects may over/under-estimate.  
Study population may be too small to detect differences? |
<table>
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<tr>
<th>Dong et al. ‘Health and vision-related QoL among pts with choroidal neovascularization secondary to age-related macular degeneration at enrollment in RCTs of submacular surgery.</th>
<th>2004</th>
<th>Survey of health related QoL of pts at enrolment of 2 RCTs</th>
<th>USA</th>
<th>Total of 790 AMD pts enrolled in 2 Submacular Surgery Trials (SST) at 27 clinical centres. The 2 trials recruited pts with AMD and either: new subfoveal CNV (group N trial); or predominantly hemorrhagic CNV (group B trial). Group N (n = 454): Mean age 77 yrs, 53% women, 88% retired, 98% non-hispanic white. 55% unilateral cases, 45% bilateral. Group B (n = 336): Mean age 79yrs, 54% women, 88% retired, 97% non-hispanic white.</th>
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<td><strong>Aims:</strong></td>
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<td>• To describe the effect of subfoveal CNV from AMD on health-related QoL of pts at enrolment in 2 RCTs of submacular surgery.</td>
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<td>• To examine relation of visual acuity to health-related QoL.</td>
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<td>• Compare scores of health-related QoL instruments between participants with unilateral and bilateral CNV independent of other characteristics.</td>
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<td><strong>Methods:</strong> Health-related QoL interviews conducted by trained telephone interviewers. Included 4 instruments:</td>
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<td>• National Eye Institute Visual Function Questionnaire (NEI-VFQ)</td>
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<td>• SF-36 survey</td>
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<td>• Hospital Anxiety and Depression Scales</td>
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<td>• SST vision preference value scales</td>
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<td><strong>Summary of Results:</strong></td>
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<td>• Participants reported poor vision-related functioning in many domains measured by the NEI-VFQ (mean score 65 for Group N and 63 for Group B; max score poss = 100).</td>
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<td>• Visual acuity of the better eye was strongly associated with NEI-VFQ scores but not</td>
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non-hispanic white. 54% unilateral, 46% bilateral.

Pts frequently had other coexisting medical conditions.

with SF-36 or HADS scores.

• Bilateral cases in both trials had substantially lower scores than unilateral cases on the NEI-VFQ overall.

Authors’ Conclusion: subfoveal CNV had a profound effect on vision-related QoL of AMD pts at time of the enrolment in the SST. Poor visual acuity in the better eye accounted for a large proportion of the compromised functioning. However, CNV in both eyes significantly lowered a pt's vision-specific function: even after controlling for visual acuity, general health status, age, gender and reading speed in the better eye.

Eklund et al. ‘Long-term evaluation of a health education programme for elderly persons with visual impairment. 2004 RCT Sweden

People referred by an ophthalmologist to rehabilitation and were attending a low vision clinic for first time.

N = 131. mean age 78yrs, 74/131 females. Median visual acuity 0.3 (range 1.0-0.1)

Aims: To evaluate a health education programme (‘discovering new ways’) for elderly people with AMD. The study examined the impact of this programme on perceived security in the performance of daily activities 28 months after the intervention.

Methods:

• 229 people were randomised to health education programme or individual intervention programme. At 28 months follow-up, 98 people had dropped out, leaving 62 in the intervention group, and 69 in comparison group.

• Health education programme (n = 62): groups of 4-6 people with AMD; 2hrs/week for 8 weeks; experienced occupational

High drop out at 28 months (98 out of 229).

Study focuses on remaining 131 participants (so not intention-to-treat). Authors state that there was no statistical difference between dropouts and the participants.

Not a blinded study. Possible selection bias.
therapist provided information and skills training, and other health professionals (e.g. ophthalmologists) were invited to give information.

- Individual intervention programme (n = 69): standard intervention at low vision clinic; participants provided with optical aids, and info given about lighting; participants also received information about the disease if requested.
- Primary outcome measure was perceived security in performing daily activities. The instrument was a questionnaire, covering meals, self-care and care of clothing, communication, cleaning, mobility, shopping and financial management.

**Summary of Results:**

**Differences between groups**

- Statistically significant differences in perceived security between the groups in 15/28 daily activities.
- People in health education group showed a significant tendency towards an improved level of security while the individual intervention group tended to deteriorate.

**Differences within groups:**

- Health education group showed statistically significant changes towards an improved level of perceived security in 20 daily activities, compared to none in individual

The health education group had a significant higher proportion of persons living alone. No statistical significant differences in other aspects measured.
Eklund et al. ‘A cost-effectiveness analysis of a health education programme for elderly persons with age-related macular degeneration: A longitudinal study’

| 2005 | Cost-effective analysis | As above |

**Aims:** To investigate if the Health Education Programme is more cost-effective than the standard individual programme.

**Methods:** see above.

**Summary of Results:**
- The total social cost per treatment was lower in the Health Education Programme compared to the Individual Programme (28,004 vs 36,341 Swedish Kroner)
- Compared to the Individual Programme, the low vision clinic costs were slightly higher in the Health Education Programme due to a higher prescription of assistive devices. However, the external costs were lower. Neither of these differences was statistically significant.

**Authors’ Conclusion:** the results suggest the replacing the standard Individual Programme with the Health Education programme is cost-effective as more persons experience increased security to a lesser total cost.

Many limitations of study: as above.

In this paper, the authors state that this analysis was performed according to the intention-to-treat principle. However, the analysis includes the 131 pts, and not the 98 drop-outs. If the analysis was truly intention-to-treat, would expect all 229 pts originally randomised to be included in the analysis.

Generalisability to other settings?
| Evans. ‘Ginkgo Biloba extract for age-related macular degeneration’ | 1999 (date of most recent substantive amendment) | Systematic Review | This review aimed to determine the effect of Ginkgo Biloba on the progression of AMD. 2 trials were found (from Germany and France). Both trials reported some positive effects of Ginkgo Biloba on vision, but were small (20 and 99 participants) and of short duration. The author concludes that current research has not answered the question as to whether Gingko Biloba is of benefit to people with AMD. | Well-conducted Cochrane review. Searches have been updated to January 2006. |
| Evans. ‘Antioxidant vitamin and mineral supplements for slowing the progression of ARMD’ | 2006 | Systematic Review | People with AMD in one or both eyes. Average age 70. **Aims:** to assess the effects of antioxidant vitamin or mineral supplementation, alone or in combination, on the progression of AMD. **Summary of Results:** - 8 trials were included in review. 2 were large trials, with reasonably long treatment duration and follow-up of 4-6 years (AREDS; VECAT). Remaining 6 were smaller, with a shorter duration of treatment and follow-up. - The main evidence re. antioxidant vitamin and mineral supplementation comes from the AREDS trial (USA). This provided evidence that long-term supplementation with vitamins C, E, beta-carotene and zinc, in people with AMD, reduced the risk of progression of the disease and visual acuity loss. Overall benefit modest, with a risk | Well-conducted Cochrane review. The vitamins and minerals considered were: vitamin C, vitamin E, carotenoids, selenium and zinc. |
In remaining small trials, results were inconsistent.

**Author's Conclusion:** People with AMD may experience a modest delay in progression of the disease with antioxidant and mineral supplementation. This finding comes from one trial conducted in a relatively well-nourished American population. Until it is replicated by other large-scale trials in other populations, will not know whether these findings can be applied more generally. Long-term harm from supplementation cannot be ruled out.

| Jain et al.  
‘Screening for age-related macular degeneration using nonstereo digital fundus photographs’ | 2006 | Retrospective review of digital fundus photographs, taken from pts referred to a macular clinic. | UK | Aims: to investigate the reliability of nonstereoscopic digital photographic screening for neovascular AMD.  
Methods: The digital fundus photographs, with no other clinical information, were presented to 2 independent ophthalmic interns, who graded the images into one of 3 categories: Normal; ARM (age-related maculopathy, early or late); and AMD (age-related macular degeneration, including CNV and PED). Included in the 198 images were 19 duplicates, presented in random order with other images, in order to assess intraobserver agreement.  
The results were compared to the known category for each patient (decided by the medical retina specialist, based on the clinical history, |
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<th>Authors/References</th>
<th>Year</th>
<th>Study Type</th>
<th>Study Population</th>
<th>Aims</th>
<th>Summary of Results</th>
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<tr>
<td>Wormald et al. ‘Photodynamic therapy for neovascular age-related macular degeneration’</td>
<td>2005</td>
<td>Systematic Review</td>
<td>People with choroidal neovascularisation due to AMD. Ophthalmology practices in Europe and North America.</td>
<td>To examine the effects of photodynamic therapy in the treatment of neovascular age-related macular degeneration.</td>
<td>2 trials were included, that randomised 948 participants to verteporfin therapy compared to 5% dextrose in water. Participants received on average 5 treatments over 2 years. RR of losing 3 or more lines of visual acuity at 24 mths comparing intervention to control group, was 0.77 (95% CI 0.69 to 0.87).</td>
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Summary of Results:
- Interobserver Kappa statistic was 0.54 (primarily due to disagreement over ‘normals’).
- Intraobserver Kappa statistic was 0.75 (grade 1) and 0.91 (grader 2).
- Identification of ARM: Sensitivity 60.5%; Specificity 76.3%.
- Identification of AMD: Sensitivity 85.7%; Specificity 78.8%.

Authors’ Conclusion: Nonstereo digital fundus photograph is a reasonable screening tool for CNV and may aid in decreasing the visual morbidity it causes by enabling timely referrals and treatment.
• RR of losing 6 or more lines of visual acuity at 24 months comparing intervention to control group was 0.62 (95% CI 0.50 to 0.76).

• The NNT to prevent one person losing 3 or more lines of vision at 24 months was 7.1 (95% CI 4.8-12.5); The NNT to prevent one person losing 6 or more lines of vision at 24 months was 7.1 (95% CI 5.0-12.5).

• The most severe adverse outcome, acute (within 7 days of treatment) severe visual acuity decrease, occurs in about 1 in 50 pts.

Authors’ Conclusion:
Photodynamic therapy in people with CNV due to AMD is probably effective in preventing visual loss though there is doubt about the size of the effect. Outcomes and potential adverse effects of this treatment should be monitored more closely. Further trials of vertoporfirn are required to establish that the effects seen in this study are consistent and to examine important issues not yet addressed, particularly relating to QoL and cost.