Photodynamic therapy for age-related macular degeneration

1 Guidance

1.1 Photodynamic therapy (PDT) is recommended for the treatment of wet age-related macular degeneration for individuals who have classic with no occult subfoveal choroidal neovascularisation (CNV), and best-corrected visual acuity 6/60 or better. PDT should be carried out only by retinal specialists with expertise in the use of this technology.

1.2 It is recommended that for people with predominantly classic CNV (that is, >50% classic but with some occult) associated with wet age-related macular degeneration, PDT is used only as part of ongoing or new clinical studies that are designed to generate robust and relevant outcome data, including data on optimum treatment regimens, long-term outcomes, quality of life and costs.

1.3 The use of PDT in occult CNV associated with wet age-related macular degeneration was not considered because the photosensitising agent (verteporfin) was not licensed for this indication when this appraisal began. No recommendation is made with regard to the use of this technology in people with this form of the condition.
2 Clinical need and practice

2.1 Age-related macular degeneration (ARMD) is characterised by irreversible damage to the central part of the retina (the macula) resulting in progressive loss of central vision. Peripheral vision is not affected, so individuals retain some useful vision. The condition has two forms, dry (non-exudative or non-neovascular) and wet (exudative or neovascular). The wet form is characterised by the development of new blood vessels beneath the retina, known as choroidal neovascularisation (CNV). CNV can be subdivided into classic and occult forms according to its appearance on investigation by fluorescein angiography. The classic form is associated with more rapid progression than the occult form. Classic and occult CNV can occur within the same lesion.

2.2 CNV lesions are also classified according to their location relative to the fovea (the area at the centre of the macula that is associated with colour vision and perception of fine detail and where there are no blood vessels to interfere with vision). CNV lesions that extend under the fovea are described as subfoveal.

2.3 ARMD usually occurs in people over 50 years of age. On the basis of limited epidemiological data, it is estimated that each year in England and Wales there may be 5000 to 7500 new cases of predominantly classic subfoveal CNV associated with wet ARMD. However, there is a high degree of uncertainty about this estimate.
2.4 In people with the wet form of ARMD, the newly formed blood vessels may leak fluid and blood, leading to scar formation and permanent damage to the macula. Individuals lose visual acuity (that is, the ability to detect fine details or small distances) and contrast sensitivity (that is, the ability to see less well-defined objects, such as faces, clearly). They may also experience distortion of vision, where the edges of objects and straight lines appear wavy. Wet ARMD usually progresses from a localised lesion to an end stage involving the entire macula, with complete or near complete loss of central vision. It has been estimated that 70% of eyes with CNV will have severe loss of vision within 2 years of diagnosis.

2.5 Central vision loss particularly impairs the perception of fine visual detail and colours. Thus activities such as reading, recognising faces and driving are affected. Significant loss of independence may occur. Rapidly deteriorating vision has an impact on emotional well-being, and individuals are likely to suffer depression and anxiety due to their loss of vision and reduction in independence. However, there is a great deal of individual variation in the ability to cope with visual loss.

2.6 For most patients with ARMD, management consists of ‘best supportive care’. Visual rehabilitation, with teaching of skills and the provision of equipment to facilitate reading and other activities of daily living, may help people make the most of their remaining
vision. However, the availability of these services is limited, and not everyone has access to high-quality visual rehabilitation.

3 The technology

3.1 The aim of photodynamic therapy (PDT) is to destroy CNV lesions without damaging the overlying retina, thereby slowing the progression of vision loss. The treatment involves infusion of a light-sensitive agent followed by light activation of the drug. At present, only verteporfin (Visudyne), a benzoporphyrin derivative, is available for this indication, but other agents are in development.

3.2 Verteporfin is given by intravenous infusion over 10 minutes, at a dose of 6 mg/m² of body surface area. Fifteen minutes after the start of the infusion, a low-powered laser calibrated to a specific wavelength is applied over a circular area slightly larger than the lesion. The laser is not powerful enough to cause any damage on its own, but the light is absorbed by the drug, which is ‘activated’, resulting in the formation of cytotoxic free radicals. These free radicals damage the new blood vessels, which may result in their closure.

3.3 In ARMD, verteporfin PDT is licensed for patients with subfoveal CNV that is predominantly (50% or more) composed of the classic form. The marketing authorisation has recently been extended to include patients with CNV that is entirely composed of the occult form. However, the clinical and cost effectiveness of PDT in this indication has not been considered in this appraisal.
3.4 The use of PDT in conditions other than ARMD is outside the scope of this appraisal.

3.5 A 15-mg vial of verteporfin (sufficient for one PDT treatment) costs £850 (British National Formulary 43, September 2002). Patients are re-evaluated every 3 months using fluorescein angiography. If CNV leakage is present, they are re-treated.

4 Evidence and interpretation

The Appraisal Committee (see Appendix A) considered evidence from a number of sources, including the Assessment Report, submissions by consultees, and views put forward at the meeting by clinical experts and representatives of patient/carer organisations (see Appendix B).

4.1 Clinical effectiveness

4.1.1 Two randomised, double-blind, placebo-controlled trials of verteporfin PDT were identified: treatment of age-related macular degeneration with PDT, the ‘TAP’ study; and verteporfin in PDT, the ‘VIP’ study. Although the TAP study involved two simultaneous trials using identical protocols, the results have been presented together, and for the purposes of this appraisal it has been treated as one study.

4.1.2 The TAP study included patients with ARMD and subfoveal CNV with some evidence of classic CNV, and best-corrected visual acuity between 6/12 and 6/60. Visual acuity of 6/12 means that
someone can see at 6 metres the same line of letters that a person with ‘normal’ (6/6) vision could see at 12 metres. This is relatively mild visual impairment. Similarly, someone with visual acuity of 6/60 can see at 6 metres what someone with normal vision could see at 60 metres. This corresponds to severely impaired vision. The VIP study was in two parts. One part included patients with CNV related to pathological myopia and was therefore outside the scope of this appraisal. The other part included patients with ARMD, although most had the occult form of CNV (only 6% had predominantly classic CNV).

4.1.3 Both studies found less deterioration in visual acuity in the PDT-treated group than in the placebo-treated group. In the TAP trial at 24 months, 47% (95% confidence interval [CI], 42% to 52%) of eyes treated with verteporfin PDT had lost 15 or more letters of visual acuity compared with 62% (95% CI, 56% to 69%) of placebo-treated eyes. For the VIP study in ARMD, the corresponding figures were 54% (95% CI, 47% to 60%) and 67% (95% CI, 58% to 75%). The loss of 15 letters of visual acuity corresponds to being able to read three fewer lines on a standard eye-test chart.

4.1.4 A subgroup analysis of the TAP data found that the treatment effect was larger in the 40% of patients (242 of 609) with predominantly classic CNV (that is, in whom at least 50% of lesions were classic-type CNV). In this subgroup at 2 years, 41% (95% CI, 33% to 49%) of eyes treated with verteporfin PDT had
lost 15 or more letters of visual acuity compared with 69% (95% CI, 59% to 79%) of placebo-treated eyes. This is the basis of the licensed indication. In patients with between 1% and 49% classic lesion composition, verteporfin PDT appeared to have no benefit relative to placebo.

4.1.5 The treatment effect was larger in the group of patients whose lesions were composed entirely of the classic type of CNV (that is classic with no occult). In these patients at 2 years, 30% (95% CI, 21% to 39%) of eyes treated with verteporfin PDT had lost 15 or more letters of visual acuity compared with 71% (95% CI, 59% to 84%) of placebo-treated eyes. This subgroup included 93 patients in the verteporfin group and 49 in the placebo group (25% of the trial population). The effect in the ‘classic with no occult’ subgroup was statistically significant relative to the effect in patients with any occult CNV (p < 0.001).

4.1.6 A further finding from the TAP trial was that PDT with verteporfin reduced the loss of contrast sensitivity – the extent to which this reduction contributes to the effect of verteporfin PDT on quality of life has not been quantified. In addition, improvement in distortion of vision has been reported anecdotally, but this aspect of the condition was not assessed in the clinical trials.

4.1.7 Some patients treated with verteporfin PDT have reported visual disturbances (abnormal vision, decreased vision, visual field defect) after treatment. Some of these disturbances involved
severe loss of vision. In most patients who experienced severe loss of vision after verteporfin PDT there was partial or complete recovery of vision to baseline values. Other adverse effects reported in clinical trials of verteporfin PDT included infusion-related pain – primarily presenting as back pain – and photosensitivity reactions in the form of sunburn following exposure to sunlight, usually within 24 hours of treatment. For full details of side effects and contraindications, see the Summary of Product Characteristics.

4.1.8 Overall, verteporfin was found to improve the chance of avoiding appreciable loss of vision (loss of 15 or more letters of visual acuity) over a period of 2 years.

4.2 Cost effectiveness

4.2.1 The Appraisal Committee considered three estimates of the cost effectiveness of verteporfin PDT: one was performed by the Assessment Group, another was commissioned by the manufacturer and submitted for this appraisal, and a third was found in the published literature. All three evaluations expressed the benefits of treatment in terms of quality-adjusted life years (QALYs). The values of the QALYs were derived from a study that related utility (health-related quality of life) to visual acuity in the better-seeing eye. Thus, the assumption that patients were receiving treatment in their better-seeing eye was inherent in all the analyses. The analyses by the Assessment Group and in the
manufacturer's submission included costs to the NHS and personal social services. The published study was from North America, so the costs included in that assessment reflect the organisation of healthcare in the USA. This limited its applicability to the evaluation of cost effectiveness in the NHS.

4.2.2 All three economic evaluations were based on data from the TAP study. The Assessment Group used the whole trial data to estimate effectiveness, whereas the manufacturer’s submission and the published evaluation based estimates on data from the subgroup of patients with predominantly classic subfoveal CNV.

4.2.3 The Assessment Group’s economic evaluation estimated that it would cost between £151,000 and £182,000 to gain one additional QALY over 2 years (the duration of the TAP study). The Assessment Group did not extrapolate the estimate of cost effectiveness beyond 2 years. However, decline in visual acuity was assumed to be linear with time in both treated and placebo groups. This does not take into account the fact that the change in visual acuity was greatest in the early part of the TAP study and that the difference between treated and placebo groups was established during the first year of treatment. A recalculation, correcting for this assumption of linearity, produced a cost-effectiveness estimate of approximately half that in the original submission, in the region of £80,000 per additional QALY at 2 years.
4.2.4 The manufacturer’s submission estimated the cost effectiveness to be approximately £70,500 per additional QALY at 2 years for people with predominantly classic CNV. The model also estimated cost effectiveness beyond 2 years. This required some assumptions about long-term outcomes to be incorporated because the clinical trials were only 2 years in duration, although the model was supported by follow-up data from a third year for some of the patients in the TAP study. The model was based on effectiveness data in the subgroup with predominantly classic CNV, and assumed that: a proportion of patients would not respond and would receive no more than two treatments; all patients would receive no further treatment after 42 months; and visual acuity would remain relatively stable after treatment. Using the assumptions regarding long-term outcome and continuation of treatment in this model resulted in continually improving cost effectiveness over time. For example, the manufacturer’s model suggested that by 5 years the cost per additional QALY could have fallen to about £33,000, and by 7 years to about £25,000.

4.2.5 The published estimate of cost effectiveness was between £61,000 and £122,000 (US $86,700–173,900, converted to pounds sterling at 2000 rates) per additional QALY at 2 years. The estimate was dependent on visual acuity at the start of therapy. The lower cost per QALY was obtained if the patient was assumed to have reasonably good vision in the better-seeing eye at the start of treatment (best-corrected visual acuity 6/12), while
the higher estimate related to a patient with relatively poor vision (best-corrected visual acuity 6/60) in the better-seeing eye. This analysis also estimated cost effectiveness beyond 2 years. The model assumed that the effectiveness of the treatment would decline with time by 10% per year. At 11 years (the estimated average life-expectancy of patients in the TAP trial), the cost per additional QALY had fallen to £30,600 ($43,500) for a patient with good initial visual acuity, and to £61,300 ($87,200) for a patient with poor initial visual acuity.

4.2.6 None of the above models considered the cost effectiveness of PDT in the subgroup of patients with classic with no occult lesions. Notwithstanding the general concerns about the validity of basing estimates of effectiveness on subgroup analyses (see Section 4.3.2), given the biological plausibility of a different effect in classic versus occult CNV, and the larger treatment effect observed, an adjustment to the Assessment Group’s model was made using the 2-year results from the TAP study for this subgroup. In the original model, the probabilities of disease progression related to the proportions of people in the TAP study who were treated and lost 3 or more lines of visual acuity by the end of 2 years compared with those who received placebo. The adjustment to the model involved multiplying these probabilities by the risk of losing 3 or more lines of visual acuity for people with classic with no occult lesions relative to the risk in the whole trial population. In this new analysis, people with classic with no
occult lesions who received PDT were 36% less likely, and those who received placebo 15% more likely, to have lost 3 or more lines of visual acuity than the average for the whole trial population.

4.2.7 On the basis of these estimates of effectiveness of PDT in people with classic with no occult CNV, the cost per additional QALY of treating individuals in this subgroup was between £10,000 and £57,000 at 2 years, depending on the assumptions regarding progression of the disease with and without treatment over the trial period. More specifically, the estimate of £10,000 was based on the assumption that change in visual acuity occurred immediately, at the beginning of the trial period, whereas the estimate of £57,000 was based on the assumption that change occurred gradually over the 2-year period. A third scenario, in which visual acuity was assumed to change most rapidly during the first year and remain relatively stable during the second year, produced a cost per additional QALY of £26,000. This third scenario reflected the progress of the patients in the TAP study most closely, and was viewed by the Appraisal Committee as being the most reasonable estimate of cost effectiveness for this subgroup.

4.2.8 The cost effectiveness of PDT for the predominantly classic subgroup is highly dependent on whether the benefits seen at 2 years in the clinical studies persist over the longer term, and whether further treatments are required. As there is no direct
evidence on which to base estimates of continued benefit, estimation of long-term cost effectiveness depends on assumptions about the future progress of treated patients. Results from studies of patients treated with ‘hot’ laser photocoagulation provide some support for a relatively stable outcome after treatment. There are also follow-up data for up to 4 years for 58% (93) of the verteporfin-treated patients from the TAP study, which support a relatively stable outcome after the first 2 years in patients with predominantly classic CNV. Loss of at least 15 letters of visual acuity occurred in 36% of patients at 24 months, 41% at 36 months and 43% at 48 months. However, these data must be interpreted with caution because patients were enrolled in the extension phase of the study only if it was judged that continued PDT might reduce the risk of further loss of vision.

4.3 Consideration of the evidence

4.3.1 The Committee reviewed the evidence available on the clinical and cost effectiveness of PDT for wet ARMD, having considered evidence from people with ARMD, those who represent them, and clinical experts, on the nature of the condition and the value placed by users on the avoidance of visual loss. It was also mindful of the need to ensure that its advice took account of the efficient use of NHS resources.
4.3.2 The Committee noted that the licensed indication for PDT and two of the three cost-effectiveness analyses were based on data from the subgroup with predominantly classic subfoveal CNV in the TAP trial. The Committee considered that, in general, subgroup analyses should be interpreted with caution. Such analyses may exaggerate the potential treatment benefit and may provide a much less sound basis for an estimate of effectiveness than the results of a whole trial. The Committee accepted, however, that a difference in response according to specific types of lesion was a biologically plausible assumption on which to base the predetermined subgroup analyses. The subgroup analysis of the TAP study comparing the effectiveness of PDT in treating classic with no occult lesions with its effectiveness in treating lesions with any occult CNV was highly significant. The subgroup analysis comparing predominantly (> 50%) classic CNV with minimally (< 50%) classic CNV was less convincing, particularly in the light of evidence that interobserver agreement for classifying complex lesions with mixed membrane types was poor compared with the almost perfect interobserver concordance for small classic lesions. The Committee therefore concluded that PDT was likely to be most effective in patients with classic with no occult lesions, and that these patients could be reliably identified.

4.3.3 In order to investigate the cost effectiveness of PDT in this classic with no occult lesions subgroup, an adjustment was made
to the Assessment Group’s economic model (see Section 4.2.6). Assuming greater clinical effectiveness of PDT in the classic with no occult subgroup, the cost effectiveness of this treatment is considerably improved relative to the whole trial population, and is likely to be in the region of £26,000 per QALY at 2 years.

4.3.4 The Committee considered the effect of visual acuity at baseline on the overall cost effectiveness of treatment. One of the economic evaluations suggested that the treatment was more cost effective in patients with good best-corrected visual acuity at baseline (6/12) than in patients with poor visual acuity (6/60). However, in the absence of evidence to indicate a level of visual acuity below which treatment is no longer worthwhile, the Committee concluded that treatment was indicated in patients with classic with no occult CNV whose best-corrected visual acuity was 6/60 or better. This was the minimum level of visual acuity required for entry into the TAP study. There is no evidence of the effectiveness of PDT in patients with greater impairment of visual acuity.

4.3.5 The Committee also reviewed the different estimates of cost effectiveness of PDT in individuals with predominantly classic CNV. The Committee noted that these estimates were dependent on a number of different assumptions, including:

- long-term treatment patterns and the associated costs of treatment
4.3.6 The Committee heard from experts in the field and carefully discussed with them the considerable uncertainty about the most appropriate treatment regimen for PDT. In view of the high cost of each PDT treatment, a key issue in determining cost effectiveness is the number of treatments received by patients. In the TAP study, patients received further treatment if there was evidence of CNV leakage on fluorescein angiography, regardless of whether their visual acuity had deteriorated further. It is uncertain whether it is necessary to continue treatment once vision has stabilised, even if CNV leakage as defined by fluorescein angiography is still present. Neither is it known whether further treatment is indicated if visual acuity declines significantly despite treatment, nor whether a regimen involving more frequent treatment in the early phase might be more effective. The economic analysis submitted by the manufacturer assumed that patients who lost more than 15 letters of visual acuity by the 6-month assessment would be deemed not to have responded and would receive no further treatment. In the first year of the TAP trial, patients received an average of 3.4 treatments. Preliminary 12-month follow-up data for 205 patients treated with PDT in 5 out of 26 registered centres in the UK show that, on average, patients received only 2.7 treatments in the first year. If this preliminary finding of a reduction in the number of
treatments required is representative of clinical practice across the NHS in England and Wales as a whole, it could have a significant effect on the overall cost effectiveness of PDT.

4.3.7 The Committee agreed that there was likely to be benefit from PDT treatment beyond 2 years. While accepting that the evidence base beyond the duration of the main clinical trial was limited, the Committee believed that restricting the estimate of the cost effectiveness of PDT to the first 2 years led to an unduly pessimistic analysis. In the manufacturer’s economic evaluation, the trial results were extrapolated using various assumptions about the long-term course of treated ARMD in comparison with the natural history of the condition. The model presented by the manufacturer assumed that vision remained relatively stable after treatment stopped. This is the most optimistic outcome possible, as treatment is not expected to improve baseline visual acuity, but to reduce further loss of vision. As there is little direct evidence on the long-term outcome after PDT has been completed, the Committee considered that an assumption of stable visual acuity could overestimate the benefits of treatment.

4.3.8 The Committee noted that all the estimates of cost effectiveness contained an inherent (optimistic) assumption that it was the patient’s better-seeing eye that was being treated. Wet ARMD is a condition that often affects both eyes. Once wet ARMD has developed in one eye, it is estimated that the risk of developing it in the other is about 42% by 5 years. When a patient presents
with one affected eye, it is not known whether or not that eye will ultimately turn out to be the better of the two. Given that there is a limited ‘window of opportunity’ in which PDT treatment will be useful, and that the second eye may develop a lesion of a type that is not amenable to treatment, the Committee considered that it was appropriate to treat classic with no occult lesions regardless of whether they occurred in the first or second eye to be affected. However, it was noted that those patients who received treatment in their poorer-seeing eye and did not go on to develop severe vision loss in their better-seeing eye would derive little benefit from PDT in terms of retaining visual function and quality of life. This means that the overall incremental cost effectiveness of PDT is likely to be less favourable than that suggested by the cost-effectiveness analyses considered for this appraisal.

4.3.9 The Committee considered in detail uncertainties surrounding the use and associated cost effectiveness of PDT in the treatment of the predominantly classic subgroup of CNV. These uncertainties were such that the Committee was unable to recommend that this technology should be generally available for the treatment of predominantly classic wet ARMD. The Committee therefore concluded that further evidence was required to determine:

- the optimum treatment regimen – in particular whether continuation of verteporfin PDT should be related to decline in visual acuity or to the presence of continuing leakage
associated with CNV lesions as defined by fluorescein angiography – and the associated number of treatments required

- long-term disease progression and the benefits of treatment in terms of visual acuity, in particular after cessation of therapy
- long-term quality of life, and in particular the utility associated with loss of vision in the poorer-seeing eye.

4.3.10 In view of the requirement for accurate diagnosis, case selection and assessment of visual outcomes, PDT should be carried out by retinal specialists with expertise in the management of ARMD and the use of this technology.

5 Recommendations for further research

5.1 Several randomised controlled trials of PDT are ongoing, including two placebo-controlled trials of verteporfin PDT, one in patients with minimally classic CNV using standard or reduced laser settings, and one in patients with occult CNV.

5.2 The Committee recommended that further research is required on the use of PDT for individuals with predominantly classic CNV related to ARMD. The primary objectives of this research should be to determine the optimum treatment regimen and long-term benefit of PDT, and to add to the current evidence on quality of life for this group of individuals (see 4.3.9).
6 Implications for the NHS

6.1 The current best estimate suggests that in England and Wales as many as 5000–7500 new cases of classic with no occult and predominantly classic CNV associated with wet ARMD occur each year. It is not known how many of these would fulfil the criteria outlined in Section 1.1. In the TAP study, which mostly recruited people whose lesions had some classic component, 23.5% patients had classic with no occult lesions. In the most recent report from the PDT users-group national surveillance programme, 300 of 757 registered eyes (39.6%) had classic with no occult CNV. As a guide, treatment of 1000 patients per year with the current PDT regimen would cost in the region of £4,000,000 in the first year, rising to £8,300,000 by the third year, and remaining constant thereafter (at current costs, excluding VAT).

6.2 Wet ARMD can progress rapidly. For a PDT service to be as effective as possible, individuals with early wet ARMD and without serious visual loss will need to be fast-tracked through the referral and waiting list processes in order to receive treatment before further loss of vision occurs.

7 Implementation and audit

7.1 Clinicians who provide care for people with wet ARMD should review local practice and policies regarding the use of PDT to take account of the guidance set out in Section 1.
7.2 Local guidelines, protocols or care pathways that refer to the care of people with wet ARMD should incorporate the guidance in Section 1.

7.3 To measure compliance locally with the guidance, the following criteria can be used. Further details on suggestions for audit are presented in Appendix C.

7.3.1 An individual with wet ARMD who has classic with no occult subfoveal CNV and best-corrected visual acuity 6/60 or better is offered PDT.

7.3.2 PDT is carried out only by a retinal specialist with expertise in its use.

7.3.3 An individual who has predominantly classic CNV associated with wet ARMD is not offered PDT, unless the individual is participating in a clinical study.

8 Related guidance

8.1 There is no related guidance for this technology.

9 Review of guidance

9.1 The review date for a technology appraisal refers to the month and year in which the Guidance Executive will consider any new evidence on the technology, in the form of an updated Assessment Report, and decide whether the technology should be referred to the Appraisal Committee for review.
9.2 The guidance on this technology will be reviewed in December 2005.

David Barnett
Chair, Appraisal Committee
January 2003
Appendix A. Appraisal Committee members

NOTE The Appraisal Committee is a standing advisory committee of the Institute. Its members are appointed for a 3-year term. A list of the Committee members who took part in the discussions for this appraisal appears below. The Appraisal Committee meets twice a month other than in December, when there are no meetings. The Committee membership is split into two branches, with the chair, vice-chair and a number of other members attending meetings of both branches. Each branch considers its own list of technologies and ongoing topics are not moved between the branches.

Committee members are asked to declare any interests in the technology to be appraised. If it is considered there is a conflict of interest, the member is excluded from participating further in that appraisal.

The minutes of each Appraisal Committee meeting, which include the names of the members who attended and their declaration of interests, are posted on the NICE website.

Dr Jane Adam  
Radiologist, St George’s Hospital, London

Dr Sunil Angris  
General Practitioner, Waterhouses Medical Practice, Staffordshire
Dr Darren Ashcroft
Senior Clinical Lecturer, School of Pharmacy and Pharmaceutical sciences, University of Manchester

Professor David Barnett (Chair)
Professor of Clinical Pharmacology, University of Leicester

Professor Carol Black (up to June 2002)
Consultant Physician, Royal Free Hospital & University College London

Professor Mike Campbell
Statistician, Institute of General Practice & Primary Care, Sheffield

Dr Mike Davies
Consultant Physician, University Department of Medicine & Metabolism, Manchester Royal Infirmary

Professor Jack Dowie
Health Economist, London School of Hygiene

Dr Paul Ewings
Statistician, Taunton & Somerset NHS Trust, Taunton

Ms Sally Gooch
Director of Nursing, Mid-Essex Hospital Services NHS Trust, Chelmsford

Professor Trisha Greenhalgh
Professor of Primary Health Care, University College London
Professor Andrew Stevens (Vice-Chair)
Professor of Public Health, University of Birmingham

Professor Ray Tallis
Consultant Physician, Hope Hospital, Salford

Professor Mary Watkins
Professor of Nursing, University of Plymouth

Dr Norman Waugh
Senior Lecturer and Public Health Consultant, University of Southampton
Appendix B. Sources of evidence considered by the Committee

A The assessment report for this appraisal was prepared by West Midlands Health Technology Assessment Group, Department of Public Health and Epidemiology, The University of Birmingham:

1 Clinical effectiveness and cost utility of photodynamic therapy for wet age-related macular degeneration (January 2002)

B The following organisations accepted the invitation to participate in this appraisal. They were invited to make submissions and comment on the draft scope, assessment report and the appraisal consultation document. Consultee organisations are provided with the opportunity to appeal against the FAD:

1 Manufacturer/sponsors:
   - Novartis Pharmaceuticals UK Limited

II Professional/specialist and patient/carer group:
   - Age Concern
   - British Geriatrics Society
   - The College of Optometrists
• Department of Health and Welsh Assembly Government
• Health Technology Board for Scotland
• Help the Aged
• Macular Disease Society
• Royal College of General Practitioners
• Royal College of Nursing Ophthalmic Forum
• Royal College of Ophthalmologists
• RNIB
• Sense
• Wales Council for the Blind

III Commentator organisations (without the right of appeal):
• East Riding and Hull Health Authority/West Hull PCT
• Moorfields Eye Hospital NHS Trust
• PDT User Group
• South East Sussex Health Authority

C The following individuals were selected from clinical expert and patient advocate nominations from the professional/specialist and patient/carer groups. They participated in the Appraisal Committee discussions and provided evidence to inform the Appraisal Committee’s deliberations. They gave their expert personal view on
photodynamic therapy for age-related macular degeneration by attending Committee discussions and/or providing written evidence to the Committee. They are also invited to comment on the ACD:

- Dr Bob Thompson, President Elect, The Macular Disease Society
- Mr Jonathan Dowler, Consultant Ophthalmologist, Moorfields Eye Hospital.
- Professor Alan Bird, Professor of Clinical Ophthalmology, UCL
- Professor Usha Chakravarthy, Professor of Ophthalmology and Vision Science, Queen's University of Belfast and Royal Hospitals Belfast
Appendix C. Detail on criteria for audit of the use of PDT for the treatment of wet ARMD

Possible objectives for an audit

An audit on PDT for the treatment of people with wet ARMD could be carried out to ensure that the technology is used appropriately.

Possible people to be included in an audit

An audit could be carried out on people being seen for treatment of wet ARMD over a suitable time period, for example, 1 year.

Measures that could be used as a basis for audit

The measures that could be used in an audit of PDT for the treatment of wet ARMD are as follows.
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Standard</th>
<th>Exceptions</th>
<th>Definition of terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An individual with wet ARMD who has classic with no occult subfoveal CNV and best-corrected visual acuity 6/60 or better is offered PDT</td>
<td>100% of people with wet ARMD who have classic with no occult subfoveal CNV and best-corrected visual acuity 6/60 or better</td>
<td>A. The individual declines PDT</td>
<td>Clinicians will have to agree locally on how the information needed is documented for audit purposes.</td>
</tr>
<tr>
<td>2. PDT is carried out by a retinal specialist with expertise in its use</td>
<td>100% of people having PDT</td>
<td>None</td>
<td>Clinicians will have to agree locally on the expertise needed to carry out PDT, for audit purposes.</td>
</tr>
</tbody>
</table>
3. An individual who has predominantly classic CNV associated with wet ARMD is offered PDT

<table>
<thead>
<tr>
<th>B. The individual is participating in a clinical study</th>
</tr>
</thead>
</table>

0% of patients with wet ARMD

Predominantly classic means >50% but with some occult. Clinicians will have to agree locally on how the information needed is documented for audit purposes.

**Calculation of compliance with the measures**

Compliance with each measure described in the table is calculated as follows.

\[
\text{Compliance} = \left( \frac{\text{Number of people whose care is consistent with the criterion } + \text{ the number of people who meet any exception}}{\text{Number of people to whom the measure applies}} \right) \times 100
\]

Clinicians should review the findings of the measurement, identify whether practice can be improved, agree on a plan to achieve any desired improvement, and repeat the measurement of actual practice to confirm that the desired improvement is being achieved.