**Subject:** Phototherapy and Laser Therapy for Acne Vulgaris  
**Guidance Number:** MCP-058  
**Revision Date(s):** 10/26/11, 6/12/14  
**Original Effective Date:** 11/20/08

## Preface

This Molina Clinical Policy (MCP) is intended to facilitate the Utilization Management process. It expresses Molina’s determination as to whether certain services or supplies are medically necessary, experimental, investigational, or cosmetic for purposes of determining appropriateness of payment. The conclusion that a particular service or supply is medically necessary does not constitute a representation or warranty that this service or supply is covered (i.e., will be paid for by Molina) for a particular member. The member's benefit plan determines coverage. Each benefit plan defines which services are covered, which are excluded, and which are subject to dollar caps or other limits. Members and their providers will need to consult the member's benefit plan to determine if there are any exclusion(s) or other benefit limitations applicable to this service or supply. If there is a discrepancy between this policy and a member's plan of benefits, the benefits plan will govern. In addition, coverage may be mandated by applicable legal requirements of a State, the Federal government or CMS for Medicare and Medicaid members. CMS's Coverage Database can be found on the CMS website. The coverage directive(s) and criteria from an existing National Coverage Determination (NCD) or Local Coverage Determination (LCD) will supersede the contents of this Molina Clinical Policy (MCP) document and provide the directive for all Medicare members. 

## FDA Indications

A number of different phototherapy devices specifically indicated for the treatment of mild to moderate inflammatory acne vulgaris have been approved by the FDA, including devices that deliver blue, green, and yellow light phototherapy; photothermolysis devices; intense pulsed dye lasers; and near-infrared lasers. 16

## Centers for Medicare and Medicaid Services (CMS)

The coverage directive(s) and criteria from an existing National Coverage Determination (NCD) or Local Coverage Determination (LCD) will supersede the contents of this Molina medical coverage guidance (MCG) document and provide the directive for all Medicare members. The directives from this MCG document may be followed if there are no available NCD or LCD documents available and outlined below.

CMS does not have a national coverage determination (NCD) or Local Coverage Determination (LCD) regarding phototherapy, photochemotherapy, or light therapies for acne vulgaris. 17

## Initial Coverage Criteria

Phototherapy, photodynamic therapy, laser therapy, pulsed dye laser therapy (585nm) photothermolysis, UV and PUVA phototherapy are considered investigational and unproven as scientific research data is insufficient for the treatment of acne vulgaris.

## Continuation of Therapy

N/A
PHOTOTHERAPY, photodynamic therapy, laser therapy, pulsed dye laser therapy (585nm) photothermolysis, UV and PUVA phototherapy are considered investigational and unproven as scientific research data is insufficient for the treatment of acne vulgaris.

DESCRIPTION OF PROCEDURE/SERVICE/PHARMACEUTICAL

Phototherapy- is defined as exposure to nonionizing radiation for therapeutic benefit. Various types are included in this definition including visible light, photodynamic therapy, photothermolysis, and laser therapy. Visible light phototherapy uses ultraviolet-free light within the visible spectrum, such as blue and red visible light with wavelength spans of 415 to 660 nm. Photodynamic therapy uses visible light with a topical application of a photosensitizer, such as a 5-aminolevulinic acid (ALA). Photothermolysis uses both light and heat energy with broadband intense pulsed light. Lasers are near-infrared with 1320 to 1540nm wavelengths.

Acne vulgaris- Acne vulgaris is a common skin disorder that peaks in incidence around the time of puberty. When the opening or pore becomes blocked by other cells; this prevents sebum from being released. When sebum and other skin cells are trapped, it allows bacteria to grow inside the pore. This bacterium then attracts white blood cells which cause the entire pore to become inflamed. When the hair follicle ruptures, it spills its contents of sebum, cells, bacteria, onto the nearby skin which results in the production of proinflammatory mediators that are largely responsible for the appearance of the inflammatory lesions of acne vulgaris: papules, pustules, and nodules. Scarring or hyperpigmentation may occur.

GENERAL INFORMATION

Summary of Medical Evidence

Medical Evidence for Phototherapy and Light Therapies for Acne Vulgaris

Phototherapy treatment options for acne vulgaris are also considered experimental and investigational due to the limited number of studies and small sample sizes (10 to 107 patients) with limited follow-up (4 to 20 weeks). The quality of evidence is weak. Studies performed have variable selection criteria, limited comparisons to conventional therapies, treatment protocol differences making it difficult to evaluate treatment effect. Long term safety and efficacy has not been established.

Systematic Review

A systematic review by Ingram and colleagues (2010) summarized clinical findings from RCTs (n=62 studies), systematic reviews (n=3) and a single guideline on the management of acne vulgaris. The review indicated that “PDT, phototherapy and laser therapy cannot be recommended universally for acne until minimal post-inflammatory pigmentation and longer-term benefit can be shown.”

Hamilton et al. (2009) conducted a systematic review of randomized controlled trials of light and laser therapies for acne vulgaris. The review included 25 RCTs (n=694), 13 of light therapy and 12 of light therapy with light-activated topical cream (i.e., PDT). The trials were generally small with very short follow-up times. The review found limited or no benefit for light therapies alone. Study results could not be used in a meta-analysis because
of the different wavelengths of light used across trials. Results of PDT trials were found to be more consistent and some short-term benefit was demonstrated in a meta-analysis of 3/12 trials. Overall, trials were limited by small sample sizes and short follow-up periods. There was a lack of studies comparing PDT with conventional treatment. Side effects of pain, erythema, and folliculitis followed by desquamation were reported. 

Riddle et al (2009) reviewed the results of clinical trials and case series examining PDT in the treatment of acne vulgaris. The authors found 21 clinical trials and case series of various designs. Eight studies employed a split-face design comparing photosensitizer to placebo, no treatment or another photosensitizer. Two trials used three test spots and one control spot per patient. Three studies utilized control subjects receiving no photosensitizer with or without light therapy. All 21 studies reported a reduction in inflammatory lesions and/or a significant improvement in acne. The light sources utilized included blue light, pulsed-dye laser (PDL), intense pulsed light (IPL) and red light. Studies comparing the use of PDT to light therapy alone demonstrated greater improvement in treatment groups pretreated with a photosensitizer. All studies reported reduction in inflammatory lesions or significant improvement in acne. Several studies confirm a light source combined with photosensitizer is superior to light alone. Adverse reactions including photosensitivity, pustular eruptions, and crusting varied among photosensitizers and light sources. The review concludes that PDT appears to be a useful therapeutic option for acne patients who are recalcitrant to standard treatments and poor candidates for systemic retinoids. Further studies are still needed before a consensus protocol can be established. Additional investigations are needed to establish optimal incubation time, activating light source and frequency of treatment.

A systematic review was conducted by Haerdersdal et al. (2008a) on photodynamic therapy, lasers and light sources. The authors indicate that the analysis included weak studies that most likely would have been eliminated by other reviewers and would have reduced the number to insignificant levels. The quality of the studies are described as “suboptimal methodological quality as the randomization method was mentioned in only 6 of 16 RCTs, only one trial described adequate allocation concealment, and most studies had many losses to follow-up with no intention-to-treat analyses.” Studies were also described as lacking long-term follow-up. The authors also conclude “the fact that several well-established drugs are available for the treatment of acne requires that new treatment modalities are profoundly examined before being included among first line treatments as well as their efficacies have to be documented similar to existing standard treatments.”

Pulsed Dye Lasers (PDL)

A single-blinded randomized controlled trial (RCT) \( [n=80] \) by Karsai et al. (2010) compared the use of a proven topical treatment alone versus this treatment in combination with PDL. No substantial benefit of adjuvant PDL was found.

Leheta (2009) performed an RCT \( (n=45) \) that compared outcomes for three groups of patients whose acne vulgaris was treated with PDL, topical preparations or chemical peeling. In the short term a significant improvement of lesions within each group was reported, but there was no significant difference found between
the three protocols after the treatment period. Remission in the follow-up period was found to be higher in the PDL group.  

An RCT (n=45) by Sami et al. (2008) evaluated the effectiveness PDL, intense IPL and LED phototherapy and reported a ≥90% reduction in acne lesions treated with the PDL, 41.7% reduction in cases of IPL and 35.3% reduction for LED cases at one-month follow-up. 

Haerdersdal et al. (2008b) found a significantly greater reduction in inflammatory lesions on MAL-LPDL-treated skin versus LPDL-treated skin at four weeks (p=0.003) and 12 weeks (p=0.004) with up to 80% reduction in inflammatory lesions.

**Photodynamic Therapy**

Orringer et al (2010) conducted a randomized, controlled, split-face, single-blind clinical trial of 44 patients with facial acne to examine the efficacy of PDT using 5-aminolevulinic acid (ALA) and pulsed dye laser therapy. Patients were randomized to receive three pulsed dye laser treatments to one side of the face after a 60-90 min ALA application time, while the contralateral side remained untreated and served as a control. Serial blinded lesion counts and global acne severity ratings were performed. Thirty percent of patients were deemed responders to this treatment with respect to improvement in their inflammatory lesion counts, while only 7% of patients responded in terms of noninflammatory lesion counts.

Three earlier randomized control trials evaluating the efficacy of ALA and MAL-PDT were conducted. Two MAL-PDT treatments for facial acne showed a 68% reduction versus 0% reduction (p=0.005) in facial acne in the untreated control and 54% versus 20% in the placebo-PDT (p=0.0006) following 12 weeks. Efficacy and pain scores from one ALA-PDT and MAL-PDT treatment were similar (59% reduction of moderate to severe pain, and reduction of inflammatory lesion; p=ns). Erythema, epithelial exfoliation, and ostular eruptions were more severe in ALA than MAL treated sides. The study limitations included short term follow-up.

**Hayes, Cochrane, UpToDate**

A Hayes Directory report was developed evaluating the safety and effectiveness of Phototherapy for Acne Vulgaris. The report indicates that there is evidence that some types of phototherapy, including blue light, red light (or a combination of the 2), pulsed dye laser (PDL), and laser light, can reduce the severity of mild to moderate facial acne, at least in the short term. However, the majority of patients in the reviewed studies did not experience complete improvement in acne lesions, and the durability of the effect remains unclear due to a lack of long-term follow-up data from well-designed and adequately sized randomized controlled trials (RCTs). The evidence regarding the use of selective photothermolysis was very limited, and no studies were found for ultraviolet (UV) and psoralen plus ultraviolet A (PUVA) phototherapy. No serious complications were reported with any of these phototherapy modalities, although there is some concern about long-term effects of exposure, including increased risk of skin cancer. Studies comparing phototherapy with other treatments for acne were lacking. Additional well-designed, longer-term RCTs are required to adequately evaluate the safety and efficacy
of phototherapy, laser, PDT, UV, and PUVA, and to compare these techniques with other medical therapies for acne vulgaris.

**UpToDate**

In a report entitled Light-based, adjunctive, and other therapies for acne vulgaris, the section on light/laser therapy indicates that clinician-administered light sources are used for the treatment of acne but well-designed clinical trials supporting the benefit of these treatments are limited.  

**Professional Organizations**

*The American Academy of Dermatology* developed guidelines of care for acne vulgaris management in 2007. These guidelines were archived in 2012 and new guidelines are under development.

### Coding Information

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<tr>
<th>CPT</th>
<th>Description</th>
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<tr>
<td>96567</td>
<td>Photodynamic therapy by external application of light to destroy premalignant and/or malignant lesions of the skin and adjacent mucosa (eg, lip) by activation of photosensitive drug(s), each phototherapy exposure session</td>
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<tr>
<td>96900</td>
<td>Actinotherapy (ultraviolet light)</td>
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<tr>
<td>96910</td>
<td>Photochemotherapy; tar and ultraviolet B (Goeckerman treatment) or petrolatum and ultraviolet B</td>
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<tr>
<td>96912</td>
<td>Photochemotherapy; psoralens and ultraviolet A (PUVA)</td>
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<td>96913</td>
<td>Photochemotherapy (Goeckerman and/or PUVA) for severe photoresponsive dermatoses requiring at least four to eight hours of care under direct supervision of the physician (includes application of medication and dressings)</td>
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<tr>
<td>E0691</td>
<td>Ultraviolet light therapy system panel, includes bulbs/lamps, timer, and eye protection; treatment area 2 sq. ft. or less</td>
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<tr>
<td>E0692</td>
<td>Ultraviolet light therapy system panel, includes bulbs/lamps, timer, and eye protection, 4 ft. panel</td>
</tr>
<tr>
<td>E0693</td>
<td>Ultraviolet light therapy system panel, includes bulbs/lamps, timer, and eye protection, 6 ft. panel</td>
</tr>
<tr>
<td>E0694</td>
<td>Ultraviolet multidirectional light therapy system in 6 ft. cabinet, includes bulbs/lamps, timer, and eye protection</td>
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S8948  Application of a modality (requiring constant provider attendance) to one or more areas; low-level laser; each 15 minutes

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**RESOURCES REFERENCES**


10/26/11 – New evidence review was conducted by the MCG Committee. The document was approved without revision.

2014 Evidence Review


Evidence not cited in this MCG: