Policy Statement

Psoralen plus ultraviolet A (PUVA) for the treatment of severe, disabling psoriasis, which is not responsive to other forms of conservative therapy (e.g., topical corticosteroids, coal/tar preparations, ultraviolet light) may be considered medically necessary.

Targeted phototherapy may be considered medically necessary for the treatment of either of the following:

I. Mild-to-moderate localized psoriasis that is unresponsive to conservative treatment

II. Moderate-to-severe localized psoriasis (i.e., comprising less than 20% body area) for which narrowband ultraviolet B or psoralen plus ultraviolet A are indicated

Targeted phototherapy is considered investigational for either of the following:

I. First-line treatment of mild psoriasis

II. Treatment of generalized psoriasis or psoriatic arthritis

NOTE: Refer to Appendix A to see the policy statement changes (if any) from the previous version.

Policy Guidelines

Disease severity in psoriasis is minimally defined by body surface area (mild psoriasis affects less than 3% of body surface area, moderate psoriasis affects 3% to 10% and severe disease affects more than 10% body surface area). However, lesion characteristics (e.g., location and severity of erythema, scaling, induration, pruritus) and impact on quality of life are also taken into account. For example, while a handprint is equal to approximately 1% body surface area, lesions on the hands, feet, or genitalia that cause disability may be classified as moderate-to-severe. The Psoriasis Area and Severity Index may be used as an outcome measure in clinical research. Clinical assessment of disease severity is typically qualitative.

Established treatments for psoriasis include the use of topical ointments and ultraviolet light (“light box”) treatments. Lasers and targeted ultraviolet B (UVB) lamps are considered equivalent devices; targeted ultraviolet devices are comparable with ultraviolet light panels for treatment purposes. First-line treatment of ultraviolet-sensitive lesions may involve around 6 to 10 sessions (physician’s office visits or at home if using a narrow-band ultraviolet B device); treatment of recalcitrant lesions may involve around 24 to 30 sessions (physician’s office visits or at home if using a narrow-band ultraviolet B device). Maintenance therapy or repeat courses of treatment may be required.

During psoralen plus ultraviolet A (PUVA) therapy, the patient needs to be assessed on a regular basis to determine the effectiveness of the therapy and the development of adverse effects. These evaluations are essential to ensure that the exposure dose of radiation is kept to the minimum compatible with adequate control of disease. Therefore, psoralen plus ultraviolet A is generally not recommended for home therapy.

Coding

The following CPT codes specifically describe ultraviolet light laser treatment for inflammatory disease (psoriasis) according to the surface area of skin treated (total area less than 250 cm², 250 cm²–500 cm², greater than 500 cm²):

- **96920**: Laser treatment for inflammatory skin disease (psoriasis); total area less than 250 sq. cm
- **96921**: Laser treatment for inflammatory skin disease (psoriasis); 250 sq. cm to 500 sq. cm
• **96922**: Laser treatment for inflammatory skin disease (psoriasis); over 500 sq. cm

The laser treatment codes are distinct from the following the CPT codes that describe the dermatologic use of ultraviolet light:

- **96900**: Actinotherapy (ultraviolet light)
- **96910**: Photochemotherapy; tar and ultraviolet B (Goeckerman treatment) or petrolatum and ultraviolet B
- **96912**: Photochemotherapy; psoralens and ultraviolet A (PUVA)
- **96913**: Photochemotherapy (Goeckerman and/or PUVA) for severe photoresponsive dermatoses requiring at least 4-8 hours of care under direct supervision of the physician (includes application of medication and dressings)

### Description

Light therapy for psoriasis includes phototherapy with ultraviolet B (UVB) light boxes, targeted phototherapy, and photochemotherapy with psoralen plus ultraviolet A (PUVA). Targeted phototherapy describes the use of ultraviolet light focused on specific body areas or lesions. PUVA uses a psoralen derivative in conjunction with long wavelength ultraviolet A light (sunlight or artificial) for photochemotherapy of skin conditions.

### Related Policies

- Dermatologic Applications of Photodynamic Therapy
- Targeted Phototherapy and Psoralen with Ultraviolet A for Vitiligo

### Benefit Application

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

### Regulatory Status

In 2001, XTRAC™ (PhotoMedex), a XeCl excimer laser, was cleared for marketing by the FDA through the 510(k) process for the treatment of mild-to-moderate psoriasis. The 510(k) clearance was subsequently obtained for a number of targeted UVB lamps and lasers, including newer versions of the XTRAC system (e.g., XTRAC Ultra™), the VTRAC™ lamp (PhotoMedex), the BClear™ lamp (Lumenis), and the European manufactured Excilite™ and Excilite µ™ XeCl lamps. FDA product code: FTC.

In 2010, the Levia Personal Targeted Phototherapy® UVB device (Daavlin; previously manufactured by Lerner Medical Devices) was cleared for marketing by the FDA through the 510(k) process for home treatment of psoriasis.

The oral psoralen products Oxsoralen-Ultra (methoxsalen soft gelatin capsules) and 8-MOP (methoxsalen hard gelatin capsules) have been approved by the FDA; both are made by
Rationale

Background
Psoriasis
Psoriasis is a common chronic immune-mediated disease characterized by skin lesions ranging from minor localized patches to complete body coverage. There are several types of psoriasis; most common is plaque psoriasis, which is associated with red and white scaly patches on the skin. In addition to being a skin disorder, psoriasis can negatively impact many organ systems and is associated with an increased risk of cardiovascular disease, some types of cancer, and autoimmune diseases (e.g., celiac disease, Crohn disease). Although disease severity is minimally defined by body surface area (mild psoriasis affects <5% of body surface area, moderate psoriasis affects 5%-10%, and severe disease affects >10% of body surface area), lesion characteristics (e.g., location and severity of erythema, scaling, induration, pruritus) and impact on quality of life are also taken into account.1, 2, 3,

Treatment
Topical therapy (e.g., corticosteroids, vitamin D analogues) is generally considered first-line treatments of psoriasis, especially for mild disease. Phototherapy and systemic therapy are treatment options for patients with more extensive and/or severe disease and those who fail conservative treatment with topical agents. Phototherapy is available in various forms including exposure to natural sunlight, use of broadband ultraviolet B devices, narrowband ultraviolet B (NB-UVB) devices, targeted phototherapy, and psoralen plus ultraviolet A (PUVA). NB-UVB is an established treatment for psoriasis, based on efficacy and safety. This evidence review addresses two alternative treatments: targeted phototherapy, which uses ultraviolet light that can be focused on specific body areas or lesions, and PUVA.

Targeted Phototherapy
Potential advantages of targeted phototherapy include the ability to use higher treatment doses and to limit exposure to surrounding tissue. Broadband ultraviolet B devices, which emit wavelengths from 290 to 320 nm, have been largely replaced by NB-UVB devices. NB-UVB devices eliminate wavelengths below 296 nm, which are considered erythemogenic and carcinogenic but not therapeutic. NB-UVB is more effective than broadband ultraviolet B and approaches PUVA in efficacy. Original NB-UVB devices consisted of a Phillips TL-01 fluorescent bulb with a maximum wavelength (lambda max) at 311 nm. Subsequently, an excimer (excited dimer) laser using xenon chloride (XeCl) and lamps were developed as targeted NB-UVB treatment devices; they generate monochromatic or very narrow band radiation with a lambda max of 308 nm. Targeted phototherapy devices are directed at specific lesions or affected areas, thus limiting exposure to the surrounding normal tissues. They may, therefore, allow higher dosages compared with a light box, which could result in fewer treatments to produce clearing. The original indication of the excimer laser was for patients with mild-to-moderate psoriasis, defined as involvement of less than 10% of the skin. Newer XeCl laser devices are faster and more powerful than the original models, which may allow treatment of patients with more extensive skin involvement (10%-20% body surface area).

Psoralen Plus Ultraviolet A
PUVA uses a psoralen derivative in conjunction with long wavelength ultraviolet A (UVA) light (sunlight or artificial) for phototherapy in skin conditions. Psoralens are tricyclic furocoumarins that occur in certain plants and can also be synthesized. They are available in oral and topical forms. Oral PUVA is generally given 1.5 hours before exposure to UVA radiation. Topical PUVA therapy refers to the direct application of the psoralen to the skin with subsequent exposure to UVA light. Bath PUVA is used in some European countries for generalized psoriasis, but the agent used (trimethylpsoralen) is not approved by the Food and Drug Administration (FDA). Paint PUVA and soak PUVA are other forms of topical application of psoralen and are
often used for psoriasis localized to the palms and soles. In paint PUVA, 8-methoxypsoralen in ointment or lotion form is put directly on the lesions. With soak PUVA, the affected areas of the body are placed in a basin of water containing psoralen. With topical PUVA, UVA exposure is generally administered within 30 minutes of psoralen application.

PUVA has most commonly been used to treat severe psoriasis, for which there is no generally accepted first-line treatment. Each treatment option (e.g., systemic therapies such as methotrexate, phototherapy, biologic therapies) has associated benefits and risks. Common minor toxicities associated with PUVA include erythema, pruritus, irregular pigmentation, and gastrointestinal tract symptoms; they generally can be managed by altering the dose of psoralen or ultraviolet light. Potential long-term effects include photoaging and skin cancer, particularly squamous cell carcinoma and possibly malignant melanoma. PUVA is generally considered more effective than targeted phototherapy for the treatment of psoriasis. However, the requirement of systemic exposure and the higher risk of adverse reactions (including a higher carcinogenic risk) have generally limited PUVA therapy to patients with more severe disease.

**Literature Review**

Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life (QOL), and ability to function, including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, 2 domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent 1 or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. RCTs are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

Psoriasis is a common chronic immune-mediated disease characterized by skin lesions ranging from minor localized patches to complete body coverage. There are several types of psoriasis; most common is plaque psoriasis, which is associated with red and white scaly patches on the skin. In addition to being a skin disorder, psoriasis can negatively impact many organ systems and is associated with an increased risk of cardiovascular disease, some types of cancer, and autoimmune diseases (e.g., celiac disease, Crohn disease). Although disease severity is minimally defined by body surface area (mild psoriasis affects < 3% of body surface area, moderate psoriasis affects 3% to 10% and severe disease affects > 10% of body surface area), lesion characteristics (e.g., location and severity of erythema, scaling, induration, pruritus) and impact on QOL are also taken into account. The Psoriasis Area Severity Index (PASI) is a more specific means of quantifying the extent and severity of psoriasis, and is utilized by both clinicians in practice and in clinical trials to monitor disease severity. The PASI takes into account the affected body surface area along with the intensity of redness, scaling, and plaque thickness. Severity scores generated using PASI range from 0 (no disease) to 72 (maximal disease severity); a score >10 generally indicates moderate-to-severe disease. In clinical trials of patients with moderate-to-severe psoriasis, a 75% reduction in PASI (i.e., PASI 75) is a common endpoint. 1,2,3,4,
Targeted Phototherapy for Mild Localized Psoriasis

Clinical Context and Therapy Purpose
The purpose of targeted phototherapy is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with mild localized psoriasis. The question addressed in this evidence review is: Does the use of targeted phototherapy improve the net health outcome in patients with localized or generalized psoriasis? The following PICO was used to select literature to inform this review.

Populations
The relevant population of interest is individuals with mild localized psoriasis (<3% body surface area and not affecting hands, feet, face, or genitals).

Interventions
The therapy being considered is targeted phototherapy, which is managed by dermatologists and primary care providers.

Comparators
The following therapy is currently being used to treat localized or generalized psoriasis: topical medication, which is managed by dermatologists and primary care providers.

Outcomes
The general outcomes of interest are symptoms, change in disease status, QOL, and treatment-related morbidity.

Though not completely standardized, follow-up for mild localized psoriasis symptoms would typically occur in the months to years after starting treatment.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:
- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

Review of Evidence
The original indication of the excimer laser was mild-to-moderate psoriasis, defined as involvement of less than 10% of the skin. Typically, this patient population has not been considered for light box therapy, because the risks of exposing the entire skin to the carcinogenic effects of ultraviolet B (UVB) light may outweigh the benefits of treating a small number of lesions. The American Academy of Dermatology does not recommend phototherapy for patients with mild localized psoriasis whose disease can be controlled with topical medications, including steroids, coal tar, vitamin D analogues (e.g., calcipotriol, calcitriol), tazarotene, and anthralin.5

Section Summary: Mild Localized Psoriasis
For individuals who have mild localized psoriasis, the evidence is lacking on the use of targeted phototherapy. The American Academy of Dermatology does not recommend phototherapy for patients with mild localized psoriasis whose disease can be controlled with topical medications. The evidence is insufficient to determine the effects of the technology on health outcomes.
Targeted Phototherapy for Treatment-Resistant Mild Psoriasis

Clinical Context and Therapy Purpose

The purpose of targeted phototherapy is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with mild psoriasis that is resistant to topical medications.

The question addressed in this evidence review is: Does the use of targeted phototherapy improve the net health outcome in patients with localized or generalized psoriasis?

The following PICO was used to select literature to inform this review.

Populations

The relevant population of interest is individuals with mild psoriasis (<3% body surface area and not affecting hands, feet, face, or genitals) that is resistant to topical medications.

Interventions

The therapy being considered is targeted phototherapy, which is managed by dermatologists and primary care providers.

Comparators

The following therapy is currently being used to treat mild psoriasis resistant to topical medications: UVB light box therapy, which is managed by dermatologists and primary care providers.

Outcomes

The general outcomes of interest are symptoms, change in disease status, QOL, and treatment-related morbidity.

Though not completely standardized, follow-up for mild psoriasis that is resistant to topical medications symptoms would typically occur in the months to years after starting treatment.

Study Selection Criteria

Methodologically credible studies were selected using the following principles:

- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

Review of Evidence

Clinical Trials

Several small within-subject studies have suggested that targeted phototherapy can be effective for treatment-resistant lesions. One 2003 patch comparison (N=14) reported effective clearing (pre-PASI score, 6.2; post-PASI score, 1.0) of treatment-resistant psoriatic lesions; 6 of the patients had previously received topical treatment, 5 had received conventional phototherapy, and 3 had received combined treatments including phototherapy. In 2004, the same investigator group reported that 12 of 13 patients with “extensive and stubborn” scalp psoriasis (i.e., unresponsive to class I topical steroids used in conjunction with tar and/or zinc pyrithione shampoos for at least 1 month) showed clearing following treatment with the 308-nm laser. In a 2006 open trial from Europe, 44 (81%) of 54 patients with palmoplantar psoriasis resistant to combined phototherapy and systemic treatments were cleared of lesions with a single NB-UVB lamp treatment weekly for 8 weeks.

Section Summary: Treatment-Resistant Mild Psoriasis

For individuals who have mild psoriasis that is resistant to topical medications who receive targeted phototherapy, the evidence includes small (N<60) within-subject studies. Studies have
shown that targeted phototherapy can improve mild localized psoriasis that has not responded to topical treatment. Targeted phototherapy is presumed to be safer or at least no riskier than whole body phototherapy, due to risks of exposing the entire skin to the carcinogenic effects of UVB light. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

**Targeted Phototherapy for Moderate-to-Severe Localized Psoriasis**

**Clinical Context and Therapy Purpose**
The purpose of targeted phototherapy is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with moderate-to-severe localized psoriasis. The question addressed in this evidence review is: Does the use of targeted phototherapy improve the net health outcome in patients with localized or generalized psoriasis? The following PICO was used to select literature to inform this review.

**Populations**
The relevant population of interest is individuals with moderate-to-severe localized psoriasis (3% to 10% body surface area or affecting hands, feet, face, or genitils).

**Interventions**
The therapy being considered is targeted phototherapy, which is managed by dermatologists and primary care providers.

**Comparators**
The following therapy is currently being used to treat moderate-to-severe localized psoriasis: UVB light box therapy, which is managed by dermatologists and primary care providers.

**Outcomes**
The general outcomes of interest are symptoms, change in disease status, QOL, and treatment-related morbidity. Though not completely standardized, follow-up for moderate-to-severe localized psoriasis symptoms would typically occur in the months to years after starting treatment.

**Study Selection Criteria**
Methodologically credible studies were selected using the following principles:
- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

**Review of Evidence**

**Systematic Reviews**
There are several systematic reviews of the literature on targeted phototherapy. Reviews differed in the types of studies selected and the comparison interventions. A systematic review by Almutawa et al (2015) considered only RCTs; PUVA was the comparison intervention.9, Reviewers identified 3 RCTs comparing the efficacy of targeted UVB phototherapy with PUVA for the treatment of plaque psoriasis. Two of the 3 trials used an excimer laser (308 nm) as the source of targeted phototherapy, and the third used localized NB-UVB light. There was no statistically significant difference between the techniques in the proportion of patients with at least a 75% reduction in psoriasis. The pooled odds ratio (OR) was 3.48 (95% confidence interval [CI], 0.56 to 22.84).

Mudigonda et al (2012) published a systematic review of controlled studies (RCTs and non-RCTs) on targeted versus nontargeted phototherapy for patients with localized psoriasis.10 Reviewers
identified 3 prospective nonrandomized studies comparing the 308-nm excimer laser with NB-UVB. Among these studies was a study by Goldinger et al (2006) that compared the excimer laser with full-body NB-UVB in 16 patients. At the end of 20 treatments, PASI scores were equally reduced on both sides of the body, from a baseline of 11.8 to 6.3 for laser treatment and from 11.8 to 6.9 for nontargeted NB-UVB treatment. Another study included in the systematic review was published in 2005 by Kollner et al and included 15 patients with stable plaque psoriasis. The study compared the 308-nm laser, the 308-nm excimer lamp, and standard TL-01 lamps. One psoriatic lesion per patient was treated with each therapy (i.e., each patient received all 3 treatments). Investigators found no significant differences in the efficacy of the 3 treatments after 10 weeks. The mean number of treatments to achieve clearance of lesions was 24.

Section Summary: Moderate-to-Severe Localized Psoriasis
For individuals who have moderate-to-severe localized psoriasis who receive targeted phototherapy, the evidence includes systematic reviews of small (N≤25) controlled trials (RCTs and non-RCTs). Systematic reviews of small controlled trials in patients with moderate-to-severe psoriasis have found that targeted phototherapy has efficacy similar to whole-body phototherapy. Targeted phototherapy is presumed to be safer or at least no riskier than whole body phototherapy, due to risks of exposing the entire skin to the carcinogenic effects of UVB light. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

Psoralen Plus Ultraviolet A for Generalized Psoriasis
Clinical Context and Therapy Purpose
The purpose of PUVA is to provide a treatment option that is an alternative to or an improvement on existing therapies in patients with generalized psoriasis. The question addressed in this evidence review is: Does the use of PUVA improve the net health outcome in patients with localized or generalized psoriasis?

The following PICO was used to select literature to inform this review.

Populations
The relevant population of interest is individuals with generalized psoriasis (>10% body surface area).

Interventions
The therapy being considered is PUVA, which is managed by dermatologists and primary care providers.

Comparators
The following therapies are currently being used to treat generalized psoriasis: topical medications and UVB light box therapy, which is managed by dermatologists and primary care providers.

Outcomes
The general outcomes of interest are symptoms, change in disease status, QOL, and treatment-related morbidity. Though not completely standardized, follow-up for generalized psoriasis symptoms would typically occur in the months to years after starting treatment.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:
- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.

Studies with duplicative or overlapping populations were excluded.

### Review of Evidence

#### Systematic Reviews and Randomized Controlled Trials

A number of RCTs and systematic reviews of RCTs have compared PUVA with other light therapies or with placebo. A Cochrane review by Chen et al (2013) assessed light therapy for psoriasis. However, that review is less useful for this evidence evaluation because reviewers combined results of studies using PUVA and broadband UVB, rather than reporting outcomes separately for these treatment modalities.

### Psoralens and Ultraviolet A versus Narrow Band-Ultraviolet B

An industry-sponsored systematic review by Archier et al (2012) focused on studies comparing PUVA with NB-UVB in patients who had chronic plaque psoriasis. Pooled analysis of 3 RCTs found a significantly higher psoriasis clearance with PUVA than with NB-UVB (OR, 2.79; 95% CI, 1.40 to 5.55). In addition, significantly more patients remained clear at 6 months with PUVA than with NB-UVB (OR, 2.73; 95% CI, 1.18 to 6.27).

### Psoralens and Ultraviolet A versus Topical Steroids

Amirinia et al (2012) published a trial in which 88 patients with moderate plaque psoriasis were randomized to PUVA or topical steroids. Treatment was continued for 4 months or until clearance was achieved. Clearance was defined as the disappearance of at least 90% of baseline lesions. All patients in both groups achieved clearance within the 4-month treatment period. Recurrence (defined as a resurgence of at least 50% of the baseline lesions) was reported significantly more often in the topical steroid group (9/44 [20.5%]) than in the PUVA group (3/44 [6.8%]; p=0.007) (Table 1).

### Psoralens and Ultraviolet A versus Ultraviolet A Without Psoralens

El-Mofty et al (2014) published an RCT comparing PUVA with broadband-UVA in 61 patients who had psoriasis affecting at least 30% body surface area. Clinical outcomes were significantly better in the PUVA group than in the broadband-UVA groups (Table 1). For example, complete clearance was obtained by 23 (77%) of 30 patients in the PUVA group, 5 (31%) of 16 patients in the 10 J/cm² UVA group, and 5 (33%) of 15 patients in the 15 J/cm² UVA group (p=0.020).

Sivanesan et al (2009) published a double-blind RCT evaluating the efficacy of 8-methoxy psoralen PUVA treatment in patients with moderate-to-severe psoriasis affecting at least 10% body surface area. The trial included 40 patients randomized to PUVA (n=30) and/or UVA plus placebo psoralens (n=10). Patients were treated 3 times weekly for 12 weeks. The primary outcome was the proportion of patients achieving a 75% or greater improvement in PASI score. At 12 weeks, 19 (63%) of 30 patients in the PUVA group and 0 (0%) of 10 patients in the UVA plus placebo group achieved the primary outcome measure (p<0.001) (Table 1). There were no serious adverse events.

### Table 1. Summary of Individual RCTs of PUVA versus Other Light Treatments

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention Modality</th>
<th>No. of Participants</th>
<th>PUVA Effectiveness</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>El-Mofty et al (2014))â‡’</td>
<td>PUVA vs UVA without psoralens</td>
<td>61</td>
<td>Complete clearance obtained by 77% of PUVA group vs 31% and 33% of UVA-only groups</td>
<td>0.020</td>
</tr>
<tr>
<td>Amirinia et al (2012))â‡’</td>
<td>PUVA vs topical steroids</td>
<td>88</td>
<td>Recurrence reported significantly more often in topical steroid group than PUVA group</td>
<td>0.007</td>
</tr>
<tr>
<td>Sivanesan et al (2009))â‡’</td>
<td>PUVA vs UVA without psoralens</td>
<td>40</td>
<td>63% of the PUVA group achieved PASI 75 at 12 wk versus 0% of UVA plus placebo group</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

PASI: Psoriasis Area Severity Index; PASI 75: 75% improvement on Psoriasis Area Severity Index; PUVA: psoralen plus ultraviolet A; RCT: randomized controlled trials; UVA: ultraviolet A.
**Section Summary: Generalized Psoriasis**

For individuals who have generalized psoriasis who receive PUVA, the evidence includes RCTs and systematic reviews of RCTs. Relevant outcomes are symptoms, change in disease status, QOL, and treatment-related morbidity. The available evidence demonstrates that PUVA is more effective than NB-UVB phototherapy, topical steroids, or ultraviolet A without psoralens in patients with generalized psoriasis. Due to side effects, PUVA is typically restricted to more severe cases. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

**Summary of Evidence**

For individuals who have mild localized psoriasis, the evidence is lacking on the use of targeted phototherapy. Furthermore, the American Academy of Dermatology does not recommend phototherapy for patients with mild localized psoriasis whose disease can be controlled with topical medications. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have mild psoriasis that is resistant to topical medications who receive targeted phototherapy, the evidence includes small (N<60) within-subject studies. Relevant outcomes are symptoms, change in disease status, QOL, and treatment-related morbidity. Studies have shown that targeted phototherapy can improve mild localized psoriasis that has not responded to topical treatment. Targeted phototherapy is presumed to be safer or at least no riskier than whole body phototherapy, due to risks of exposing the entire skin to the carcinogenic effects of UVB light. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have moderate-to-severe localized psoriasis who receive targeted phototherapy, the evidence includes systematic reviews of small (N≤25) controlled trials (RCTs and non-RCTs). Relevant outcomes are symptoms, change in disease status, QOL, and treatment-related morbidity. Systematic reviews of small controlled trials in patients with moderate-to-severe psoriasis have found that targeted phototherapy has efficacy similar to whole-body phototherapy. Targeted phototherapy is presumed to be safer or at least no riskier than whole body phototherapy, due to risks of exposing the entire skin to the carcinogenic effects of UVB light. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have generalized psoriasis who receive PUVA, the evidence includes RCTs and systematic reviews of RCTs. Relevant outcomes are symptoms, change in disease status, QOL, and treatment-related morbidity. The available evidence demonstrates that PUVA is more effective than NB-UVB phototherapy, topical steroids, or ultraviolet A without psoralens in patients with generalized psoriasis. Due to side effects, PUVA is typically restricted to more severe cases. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

**Supplemental Information**

**Practice Guidelines and Position Statements**

**American Academy of Dermatology and National Psoriasis Foundation**

In 2019, the American Academy of Dermatology (AAD) and National Psoriasis Foundation (NPF) joint guidelines on the management and treatment of psoriasis with phototherapy give strong recommendations for the use of targeted ultraviolet B (UVB) (Table 2).

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Strength</th>
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<tbody>
<tr>
<td>3.1</td>
<td>Targeted UVB phototherapy, including excimer laser, excimer light, and targeted NB-UVB light, for use in adults with localized plaque psoriasis, for individual lesions, or in patients with more extensive disease</td>
<td>A</td>
</tr>
</tbody>
</table>
For maximal efficacy, treatment with targeted UVB phototherapy for adults with localized plaque psoriasis should be carried out 2 to 3 times/wk rather than once every 1 to 2 wk.

The starting dose for targeted UVB phototherapy for adults with localized plaque psoriasis can be determined on the basis of the MED or by a fixed-dose or skin phototype protocol.

An excimer laser is more efficacious than an excimer light, which is more efficacious than localized NB-UVB light for the treatment of localized plaque psoriasis in adults.

Recommend targeted UVB phototherapy, including excimer laser and excimer light, for use in adults with plaque psoriasis, including palmoplantar psoriasis.

Excimer laser may be combined with topical corticosteroids in the treatment of plaque psoriasis in adults.

Recommend excimer laser in the treatment of scalp psoriasis in adults.

The guidelines state of home narrowband-UVB therapy that evidence shows similar results regarding efficacy, quality of life, and side effects between patients with mild-to-severe psoriasis who received home treatments and those who received treatments at hospitals. In addition, home treatment was found to significantly lessen the burden on patients who had to travel to a phototherapy center.

The AAD and NPF joint guidelines (2020) on the management and treatment of psoriasis in pediatric patients also provide recommendations for phototherapy (Table 3). The evidence for phototherapy in the pediatric population is limited and generally of low quality.

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Strength</th>
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<tbody>
<tr>
<td>17.1</td>
<td>NB-UVB is recommended as a treatment option for moderate to severe pediatric plaque and guttate psoriasis.</td>
<td>B</td>
</tr>
<tr>
<td>17.2</td>
<td>The use of excimer laser or PUVA therapy in children with psoriasis may be efficacious and well tolerated but has limited supporting evidence.</td>
<td>C</td>
</tr>
</tbody>
</table>

Table adapted from Elmets et al (2019). MED: minimal erythema dose; NB-UVB: narrowband ultraviolet B; UVB: ultraviolet B.

American Academy of Dermatology
In 2010, the American Academy of Dermatology guidelines on the management of psoriasis recommended that patients with psoriasis who are compliant could, under dermatologist supervision, be considered appropriate candidates for home UVB therapy. Targeted phototherapy was recommended for patients with mild, moderate, or severe psoriasis with less than 10% involvement of the body surface area. Systemic psoralen plus ultraviolet A was indicated in adults with generalized psoriasis resistant to topical therapy.

National Psoriasis Foundation
In 2017, the National Psoriasis Foundation published consensus guidance based on a task force review of the literature on the treatment for psoriasis involving skinfolds (inverse or intertriginous) psoriasis. The treatment guidance for intertriginous or genital psoriasis stated: "...there is anecdotal evidence demonstrating the strong clinical efficacy of biologic treatment; with limited knowledge on the effects of biologics on intertriginous or genital psoriasis." The guidance on inverse psoriasis is provided in Table 4.

<table>
<thead>
<tr>
<th>Line of Therapy</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-line therapy</td>
<td>Low potency topical steroids for periods less than 2 to 4 wks</td>
</tr>
<tr>
<td>Other topical therapies to consider are tacrolimus, pimecrolimus, calcitriol, or calcipotriene to avoid steroid side effects with long-term treatment</td>
<td></td>
</tr>
<tr>
<td>Second- and third-line therapies</td>
<td>Antimicrobial therapy, emollients, and tar-based products</td>
</tr>
<tr>
<td>Axillary involvement can be treated with botulinum toxin injection to reduce perspiration and inhibit inflammatory substance release</td>
<td></td>
</tr>
<tr>
<td>Excimer laser therapy or systemic agents</td>
<td></td>
</tr>
</tbody>
</table>

Table adapted from Menter et al 2020. NB-UVB: narrowband ultraviolet B; PUVA: psoralens and ultraviolet A.
The National Psoriasis Foundation (2017) also published recommendations based on a review of the literature on the treatment for psoriasis in solid organ transplant patients. Because organ transplant patients are excluded from randomized controlled trials, there are limited data. The recommendations were based on case series (see Table 5).

Table 5. Recommendations on Treatment of Psoriasis for Solid Organ Transplant Patients

<table>
<thead>
<tr>
<th>Line of Therapy</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-line therapy for mild-to-moderate psoriasis</td>
<td>Topical therapy</td>
</tr>
<tr>
<td>First-line therapy for moderate-to-severe psoriasis</td>
<td>• Acitretin with narrowband ultraviolet light or</td>
</tr>
<tr>
<td></td>
<td>• Narrowband ultraviolet light or</td>
</tr>
<tr>
<td></td>
<td>• Acitretin</td>
</tr>
<tr>
<td>Second-line therapy</td>
<td>Increasing the current anti-rejection drug dose</td>
</tr>
<tr>
<td>Severe psoriasis or refractory cases</td>
<td>Systemic or biologic therapies</td>
</tr>
</tbody>
</table>

U.S. Preventive Services Task Force Recommendations
Not applicable.

Medicare National Coverage
Ultraviolet light treatment is covered; targeted phototherapy is not specifically mentioned. There is no national coverage determination on psoralen plus ultraviolet A.

Ongoing and Unpublished Clinical Trials
There are currently no ongoing trials that might influence this review.

References


**Documentation for Clinical Review**

Please provide the following documentation:
- History and physical and/or consultation notes including:
  - Current treatment plan
  - Make and model of requested device (if applicable)
  - Prescription for device requested (if applicable)
  - Previous treatment plan and response

*Post Service (in addition to the above, please include the following):*
- Treatment procedure(s) performed

**Coding**

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy. Inclusion or exclusion of codes does not constitute or imply member coverage or provider reimbursement.

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT</td>
<td>96900</td>
<td>Actinotherapy (ultraviolet light)</td>
</tr>
<tr>
<td></td>
<td>96910</td>
<td>Photochemotherapy; tar and ultraviolet B (Goeckerman treatment) or petrolatum and ultraviolet B</td>
</tr>
</tbody>
</table>
### Type, Code, Description

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>96912</td>
<td>Photochemotherapy; psoralens and ultraviolet A (PUVA)</td>
</tr>
<tr>
<td></td>
<td>96913</td>
<td>Photochemotherapy (Goeckerman and/or PUVA) for severe photoresponsive dermatoses requiring at least 4-8 hours of care under direct supervision of the physician (includes application of medication and dressings)</td>
</tr>
<tr>
<td></td>
<td>96920</td>
<td>Laser treatment for inflammatory skin disease (psoriasis); total area less than 250 sq cm</td>
</tr>
<tr>
<td></td>
<td>96921</td>
<td>Laser treatment for inflammatory skin disease (psoriasis); 250 sq cm to 500 sq cm</td>
</tr>
<tr>
<td></td>
<td>96922</td>
<td>Laser treatment for inflammatory skin disease (psoriasis); over 500 sq cm</td>
</tr>
<tr>
<td></td>
<td>E0693</td>
<td>Ultraviolet light therapy system panel, includes bulbs/lamps, timer and eye protection, 6 ft panel</td>
</tr>
<tr>
<td></td>
<td>E0694</td>
<td>Ultraviolet multidirectional light therapy system in 6 ft cabinet, includes bulbs/lamps, timer, and eye protection</td>
</tr>
<tr>
<td></td>
<td>J8999</td>
<td>Prescription drug, oral, chemotherapeutic, NOS</td>
</tr>
</tbody>
</table>

### Policy History

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.

<table>
<thead>
<tr>
<th>Effective Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/01/2001</td>
<td>New Policy Adoption</td>
</tr>
<tr>
<td>10/01/2002</td>
<td>Policy Review</td>
</tr>
<tr>
<td>01/11/2008</td>
<td>Policy Revision Policy statement changed from Investigational to Medical Necessity</td>
</tr>
<tr>
<td>10/28/2009</td>
<td>Coding Update</td>
</tr>
<tr>
<td>04/02/2010</td>
<td>Administrative Review</td>
</tr>
<tr>
<td>01/07/2011</td>
<td>Policy title change from Laser Treatment for Psoriasis Policy revision with position change</td>
</tr>
<tr>
<td>10/31/2014</td>
<td>Policy title change from Laser and Targeted Phototherapy for Psoriasis Policy revision with position change</td>
</tr>
<tr>
<td>05/29/2015</td>
<td>Policy revision without position change</td>
</tr>
<tr>
<td>03/01/2016</td>
<td>Policy revision without position change</td>
</tr>
<tr>
<td>02/01/2017</td>
<td>Policy revision without position change</td>
</tr>
<tr>
<td>02/01/2018</td>
<td>Policy revision without position change</td>
</tr>
<tr>
<td>02/01/2019</td>
<td>Policy revision without position change</td>
</tr>
<tr>
<td>02/01/2020</td>
<td>Annual review. No change to policy statement. Literature review updated</td>
</tr>
<tr>
<td>02/01/2021</td>
<td>Annual review. No change to policy statement. Policy guidelines and literature review updated.</td>
</tr>
</tbody>
</table>

### Definitions of Decision Determinations

**Medically Necessary:** Services that are Medically Necessary include only those which have been established as safe and effective, are furnished under generally accepted professional standards to treat illness, injury or medical condition, and which, as determined by Blue Shield, are: (a) consistent with Blue Shield medical policy; (b) consistent with the symptoms or diagnosis; (c) not furnished primarily for the convenience of the patient, the attending Physician or other provider; (d) furnished at the most appropriate level which can be provided safely and effectively to the patient; and (e) not more costly than an alternative service or sequence of
services at least as likely to produce equivalent therapeutic or diagnostic results as to the
diagnosis or treatment of the Member’s illness, injury, or disease.

**Investigational/Experimental:** A treatment, procedure, or drug is investigational when it has not
been recognized as safe and effective for use in treating the particular condition in accordance
with generally accepted professional medical standards. This includes services where approval
by the federal or state governmental is required prior to use, but has not yet been granted.

**Split Evaluation:** Blue Shield of California/Blue Shield of California Life & Health Insurance
Company (Blue Shield) policy review can result in a split evaluation, where a treatment,
procedure, or drug will be considered to be investigational for certain indications or conditions,
but will be deemed safe and effective for other indications or conditions, and therefore
potentially medically necessary in those instances.

### Prior Authorization Requirements (as applicable to your plan)

Within five days before the actual date of service, the provider must confirm with Blue Shield that
the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an
authorization prior to services being rendered based on cancellation of the member's eligibility.
Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization
Department at (800) 541-6652, or the Transplant Case Management Department at (800) 637-2066 ext. 3507708 or visit the provider portal at www.blueshieldca.com/provider.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or
treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national
guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well
as contract language, including definitions and specific contract provisions/exclusions, take precedence
over medical policy and must be considered first in determining covered services. Member contracts may
differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.
Appendix A

<table>
<thead>
<tr>
<th>POLICY STATEMENT (No changes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEFORE</td>
</tr>
<tr>
<td><strong>Light Therapy for Psoriasis 2.01.47</strong></td>
</tr>
<tr>
<td><strong>Policy Statement:</strong> Psoralen plus ultraviolet A (PUVA) for the treatment of severe, disabling psoriasis, which is not responsive to other forms of conservative therapy (e.g., topical corticosteroids, coal/tar preparations, ultraviolet light) may be considered <strong>medically necessary</strong>.</td>
</tr>
<tr>
<td>Targeted phototherapy may be considered <strong>medically necessary</strong> for the treatment of <strong>either</strong> of the following:</td>
</tr>
<tr>
<td>• Mild-to-moderate localized psoriasis that is unresponsive to conservative treatment</td>
</tr>
<tr>
<td>• Moderate-to-severe localized psoriasis (i.e., comprising less than 20% body area) for which narrowband ultraviolet b or psoralen plus ultraviolet a are indicated</td>
</tr>
<tr>
<td>Targeted phototherapy is considered <strong>investigational</strong> for <strong>either</strong> of the following:</td>
</tr>
<tr>
<td>• First-line treatment of mild psoriasis</td>
</tr>
<tr>
<td>• Treatment of generalized psoriasis or psoriatic arthritis</td>
</tr>
</tbody>
</table>

Light Therapy for Psoriasis 2.01.47

**Policy Statement:** Psoralen plus ultraviolet A (PUVA) for the treatment of severe, disabling psoriasis, which is not responsive to other forms of conservative therapy (e.g., topical corticosteroids, coal/tar preparations, ultraviolet light) may be considered **medically necessary**. |

Targeted phototherapy may be considered **medically necessary** for the treatment of **either** of the following: |

I. Mild-to-moderate localized psoriasis that is unresponsive to conservative treatment |
II. Moderate-to-severe localized psoriasis (i.e., comprising less than 20% body area) for which narrowband ultraviolet b or psoralen plus ultraviolet a are indicated |

Targeted phototherapy is considered **investigational** for **either** of the following: |

I. First-line treatment of mild psoriasis |
II. Treatment of generalized psoriasis or psoriatic arthritis |