

Policy #: 059

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Title

Phototherapy

Light Therapy For Neonatal Jaundice, & Other Conditions

PUVA, UV-B, Home UVB Booth

For photopheresis see policy # [071](#)

For phototherapy for SAD see policy # [037](#)

When services are covered for all Plans including Medicare HMO Blue, Medicare PPO Blue and Blue Medicare PFFS Plus Rx

Ultraviolet B (UVB) is effective in the treatment of psoriasis. Photochemotherapy (PUVA) is effective in the treatment of psoriasis, vitiligo and atopic dermatitis.

We cover **PUVA treatment** for the following conditions:

- Moderate to severe localized psoriasis (i.e., comprising less than 20% body area) for which NB-UVB or PUVA are indicated 20
- Mild to moderate psoriasis that is unresponsive to conservative treatment
- Parapsoriasis
- Atopic dermatitis/ Eczema
- Lichen planus
- Urticaria pigmentosa
- Chronic recalcitrant dermatitis
- Pruritus
- Vitiligo on the face, neck¹¹ and hands.¹²
- Dyshidrosis

We cover **PUVA treatment** as initial (primary) treatment for Mycosis fungoides Stages I (early infiltrative) and II (infiltrative plaques).

We cover **PUVA treatment** for graft-versus-host disease **for Medicare HMO Blue and Medicare PPO Blue, Blue Medicare members only**, in accordance with the Centers for Medicare and Medicaid Services guidelines.^{8,9}

We cover **UV-B phototherapy** for patients with the following:

- Moderate to severe localized psoriasis (i.e., comprising less than 20% body area) for which NB-UVB or PUVA are indicated 21
 - Mild to moderate psoriasis that is unresponsive to conservative treatment
 - Parapsoriasis
 - Atopic dermatitis/ Eczema
 - Lichen planus
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- Urticaria pigmentosa
- Chronic recalcitrant dermatitis
- Pruritus
- vitiligo on the face, neck and hands.¹⁷

NOTE: UV-B phototherapy is administered 3 different ways:

- Broadband in a light box
- Narrow band in a light box
- Narrowband emitted or delivered by laser.¹⁸

Narrow Band UVB (NB - UVB) 311 nm is reported to be effective in the treatment of psoriasis, vitiligo and atopic dermatitis.

We cover **home ultraviolet light booth for UV-B phototherapy** for patients with severe psoriasis.

We cover **home phototherapy for neonatal jaundice** when prescribed by a participating physician.^{10, 13}

When services are not covered

We do not cover **PUVA treatment** for graft-versus-host disease (**except for Medicare HMO Blue and Medicare PPO Blue, Blue Medicare PFFS Plus Rx members as noted above**).

We do not cover **phototherapy** (including light boxes, panels, or visors) for the following conditions because light therapy has not been shown to be more effective than placebo for:

- Jet lag
- Disorders related to shift work or irregular work cycles
- Delayed or altered sleep phase syndromes
- Circadian rhythm disorders.

We do not cover **PUVA treatment** for other conditions not listed above.

Targeted phototherapy is considered **investigational** for the first-line treatment of mild psoriasis.

Targeted phototherapy is considered **investigational** for the treatment of generalized psoriasis or psoriatic arthritis.

We do not cover **UV-B phototherapy** for other conditions not listed above.

(See footnote 18 for a listing of FDA-approved devices. Please note this is not an all inclusive list.)

Relative contraindications to PUVA therapy

The following are relative contraindications to PUVA therapy. Coverage is determined at the physician's discretion:⁷

- Pregnancy (absolute contraindication)⁷
- History or presence of melanoma or other skin cancer⁷
- History of arsenic or ionizing radiation exposure.⁷

Certain diseases may be worsened by UV light, including:⁷

- Lupus
- Xeroderma pigmentosum
- Albinism
- Porphyria
- Cataracts

- Aphakia
- Severe heart, kidney, or liver disease
- Certain diseases with suppressed immune systems
- Patients allergic to this form of light.

Individual consideration

All our medical policies are written for the majority of people with a given condition. Each policy is based on medical science. For many of our medical policies, each individual's unique clinical circumstances may be considered in light of current scientific literature. For consideration of an individual patient, physicians may send relevant clinical information to:

For services already billed

Blue Cross Blue Shield of Massachusetts
 Provider Appeals
 P. O. Box 986075 (For Ancillary/Behavioral Health)
 P. O. Box 986065 (For Professional Providers)
 P. O. Box 986070 (For Institutional Providers)
 Boston, MA 02298

Prior to performance of service

Blue Cross Blue Shield of Massachusetts
 Appeals Unit
 One Enterprise Drive
 Quincy, MA 02171
 Tel: 1-800-327-6716
 Fax: 1-888-641-5330

Managed care guidelines

PUVA (Ultraviolet Light Therapy):

- Any specialist visit requires a referral for **Medicare HMO Blue**.
- For all other Managed Care plans, any specialist visit requires a referral, except for visits performed by OB/GYN specialists.
- Authorizations are not required.

Indemnity and PPO guidelines

All authorization requirements are determined by the individual's subscriber certificate, however:

- Authorizations are required for all inpatient services.
- Authorizations are not required for most outpatient services as determined by the individual's subscriber certificate.
- Referrals to a specialist are not required.

Coding information

Procedure codes are from current CPT, HCPCS Level II, Revenue Code, and/or ICD-9-CM manuals, as recommended by the American Medical Association, Centers for Medicare and Medicaid Services and American Hospital Associations. Blue Cross Blue Shield Association national codes may be developed when appropriate.

The following codes are included below for informational purposes. Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.

For DME Providers:

- HCPCS level II code E0202, home phototherapy (bilirubin) light with photometer. This therapy may be provided in the home in the form of a lamp, light panel or special light blanket (i.e., wallaby blanket).
- HCPCS Level II code E0691, ultraviolet therapy system panel, includes bulbs/lamps, timer and eye protection; treatment area 2 square feet or less

- HCPCS Level II code E0692, ultraviolet light therapy system panel, includes bulbs/lamps, timer and eye protection, 4 foot panel
- HCPCS Level II code E0693, ultraviolet light therapy system panel, includes bulbs/lamps, timer and eye protection, 6 foot panel
- HCPCS Level II code E0694, ultraviolet multidirectional light therapy system in six foot cabinet, includes bulbs/lamps, timer and eye protection

Modifiers:

- NU for new equipment
- RR for rental

For Physicians:

- CPT code 96910, photochemotherapy; tar and ultraviolet B (Goeckerman treatment) or petroleum and ultraviolet B
- CPT code 96912, photochemotherapy; psoralens and ultraviolet A (PUVA).
- CPT code 96913, 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).

Coding for UVB treatment via xenon chloride excimer laser

NOTE: There is no specific CPT or HCPCS Level II procedure code available for coding when using the Xenon Chloride Excimer laser in the treatment of vitiligo and other covered clinical indications. Providers should follow AMA/CMS coding guidelines for when a code is not available, and also provide appropriate documentation for the service.

- CPT code 96920, Laser treatment for inflammatory skin disease (psoriasis); total are less than 250 sq cm
- CPT code 96921, Laser treatment for inflammatory skin disease (psoriasis); 250 sq cm to 500 sq cm
- CPT code 96922, Laser treatment for inflammatory skin disease (psoriasis); over 500 sq cm

If the above codes are submitted for a diagnosis other than ICD-9 diagnosis code 696.1 – other psoriasis, it will deny, leaving no patient balance.

For outpatient billing:

Revenue code 510 (clinic) with the appropriate CPT code.

Other information

- **Home phototherapy** for neonatal jaundice is covered as a DME benefit and is subject to the DME benefit maximum and/or any applicable co-insurance.
- **Home phototherapy** equipment is payable to a participating DME provider only.
- If home phototherapy is submitted for a diagnosis other than neonatal jaundice, it will deny, leaving no patient balance.
- **PUVA therapy** is considered a medical benefit and subject to any applicable co-payment as indicated on the subscriber certificate.
- **PUVA therapy** will deny as non-covered leaving no patient balance if submitted with any other diagnosis except those listed.

Ultraviolet B Home Booth

- Ultraviolet B Home Booth is processed as a DME benefit and subject to the DME benefit maximum and any co- insurance.
- We reimburse the Ultraviolet B Home Booth once in a member’s lifetime.
- We do not reimburse for the rental of an Ultraviolet B Home Booth.

- We do not reimburse for replacement lamps, maintenance or installation for an Ultraviolet B Home Booth.
- Benefits are determined by the subscriber certificate in effect at the time the services are rendered.
- If ultraviolet B home booth is submitted for a diagnosis other than severe psoriasis it will deny, leaving no patient balance.

Patient information

National Psoriasis Foundation (800) 723-9166
 6600 SW 92nd Avenue, Suite 300, Portland, OR 97223-7195
 Web: <http://www.psoriasis.org> Email: 76135.2746@compuserve.com

Psoriasis Research Association (415) 593-1394
 107 Vista Del Grande, San Carlos, CA 94070

American Academy of Dermatology (847) 330-0230
 930 North Meacham Road, P.O. Box 4014, Schaumburg, IL 60168-4014
 Web: <http://www.aad.org>

Medical Management Tool

Produced by Blue Cross and Blue Shield of Massachusetts
 Available by calling 888-633-7654 and requesting document number 604.

American Academy of Pediatrics

Management of hyperbilirubinemia in healthy term newborns:
<http://aapolicy.aapublications.org/cgi/content/full/pediatrics;114/1/297>

Definitions

Neonatal jaundice: Some newborns have jaundice, a yellow skin color caused by too much of a certain natural blood pigment (bilirubin). A rapid worsening of neonatal jaundice may be associated with irreversible brain damage. To help the problem resolve more quickly, a special light shone on the skin will lower the amounts of bilirubin pigment in the blood. This therapy may be provided at home in the form of a lamp, light panel, or special light blanket.

Circadian rhythm disorders: The human body functions slightly differently at different times of day and night, according to an approximate 24 hour cycle. For example, the body's level of the natural hormone, cortisol, rises and falls at different times of the day. As well, a person's performance at some tasks is better at certain times of the day. Circadian rhythm is a term for the body's natural 24 hour cycle. Disturbance of the natural rhythm may show up as problems sleeping and waking at usual times.

Many skin diseases respond to treatment with medications applied directly to the skin, or medications taken orally. In some difficult to treat skin disorders, ultraviolet light is prescribed as therapy. While in general, ultraviolet light is damaging to the skin, some diseases may show benefit from ultraviolet exposure.

To make the skin even more sensitive to the ultraviolet rays, a pill called a psoralen is sometimes taken (the opposite effect of a sunscreen). Once the psoralen is absorbed into the body, it makes the skin cells more susceptible to **Ultraviolet-A** (UV-A) light. The combination of psoralen pill and UV-A light is called photochemotherapy, or PUVA. The light is usually shone inside a booth, either in a hospital or clinic, to part or all of the body. While it is not known exactly how it works, there is first mild damage to the skin (like a sunburn) followed by healing of the skin later. **Ultraviolet B** (UV-B) is a different wavelength of light used to treat some of the same skin disorders as UV-A. UV-B booths can be installed in the home setting.

albinism: lack of the skin pigment, melanin

aphakia: lack of the eye's natural lens

atopic dermatitis: allergic red rash

bilirubin: a natural pigment that comes from red blood cells (from hemoglobin); it may build up temporarily in some newborns, or in patients with liver problems

cataracts: cloudiness of the eye's natural lens

CBC: complete blood count, a blood test to check the number of red and white cells

chronic recalcitrant dermatitis: skin that continues to be inflamed despite treatment

Coombs test: a blood test to see if the body has made certain proteins (antibodies) that might attack red blood cells

direct bilirubin: bilirubin that has gone into the liver, the body's site for processing bilirubin

eczema: allergic red rash, similar to atopic dermatitis

graft vs. host disease: when the cells of a transplant patient begin to attack the patient's body, causing rashes, and other problems

hemolytic disease: disease that shreds red blood cells, releasing hemoglobin (and bilirubin) into the blood

indirect bilirubin: bilirubin that has not gone into the liver, the body's site for processing bilirubin

infiltrative: an area that is infiltrated, or filled with disease

lichen planus: flat, purple, itchy patches of skin

lupus: a disease where the body forms a reaction against its own parts; signs of the disease may include arthritis, eye problems, neurologic problems, kidney disease, and other problems

metabolic errors: problems the body may have in processing (metabolizing) substances naturally made by the body

mycosis fungoides: a rare white blood cell cancer of the skin, with red ulcers

NB-UVB: (narrow band): UVB is typically directed to the whole body or large sections of the body with light panels or light cabinets, requiring multiple treatments given several times a week. Broadband UVB devices, which emit wavelengths from 290 to 320 nm have been largely replaced by narrowband UVB (NB-UVB) devices. NB-UVB devices eliminate wavelengths below 296 nm, which are considered erythrogenic and carcinogenic but not therapeutic. NB-UVB is more effective than BB-UVB and approaches PUVA in efficacy.

parapsoriasis: red itchy bumps which are hard to treat. There are several forms: pityriasis lichenoides, lichenoides chronica, and varioliformis chronica

plaques: raised flat bumps that can be seen with the disease Mycosis fungoides

porphyria: a disease where the body's ability to process certain natural pigments in the blood, is abnormal

pruritus: itchiness, which may be due to many different causes

psoriasis: red scaly bumps or patches, often on the knees, elbows; various forms

reducing substances: chemicals that might naturally be found in the urine, that give a clue to some diseases

serum: blood

urinalysis: test on urine

urticaria pigmentosa: a kind of allergic hives: itchy pink/brown bumps

vitiligo: patches of skin which have lost the coloring pigment (melanin)

xeroderma pigmentosum: abnormally dry skin, beginning in childhood; these patients are very sensitive to sunlight, and get large freckle-like spots on their skin; eye and nerve problems may also occur

Policy update history

Policy issued 10/95. Revised 8/97 to include coverage for PUVA treatment for graft-versus-host disease for Medicare HMO Blue members. Reviewed 10/97; no coverage changes were made. Updated 2/98 to remove criteria for home phototherapy for neonatal jaundice. Updated 8/98; to clarify billing information for the following forms of phototherapy: lamp, light panel, or special blanket. Updated 2/99 to include coverage for vitiligo on the face and neck, effective 3/1/99. Special thanks to the Massachusetts Chapter of the American Academy of Dermatology and Dr. Joop Grevelink of Massachusetts General Hospital. Coverage is also included for home UV-B booth for patients with severe psoriasis who require frequent ultraviolet light treatments but are unable to travel. Updated 5/99 to convert medical policy on phototherapy into a clinical recommendation. Updated 2/00 to convert clinical recommendation document into a medical policy. Updated 1/01 to include coverage for PUVA for vitiligo on the hands. Reviewed 2/03 MPG Psychiatry, no changes in

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coverage were made. Reviewed 11/03 MPG pediatrics, no changes in coverage were made. Reviewed 12/03 MPG plastic surgery and dermatology, no changes in coverage were made. Reviewed 2/04 MPG Psychiatry, Ophthalmology and Endocrinology, no changes in coverage were made. Updated 4/04 to include coverage for **UV-B phototherapy** for patients with vitiligo on the face, neck and hands, effective August 2004. Reviewed 5/04 MPG pediatrics, no changes in coverage were made. Updated 1/05 to include coverage for XTRAC/photomedex for treatment of vitiligo on the face, neck and hands; effective April 2005; clarified coverage statement for PUVA treatment for graft-versus-host disease for Medicare HMO Blue members. Reviewed 2/05 MPG Psychiatry, ophthalmology and endocrinology, no changes in coverage were made. Reviewed 5/05 MPG- Pediatrics, no changes in coverage were made. Reviewed 12/05 MPG-Plastic Surgery and Dermatology, no changes in coverage were made. Reviewed 5/06 MPG-Pediatrics, no changes in coverage were made. Updated 12/06 to remove Individual Consideration guideline for phototherapy for seasonal affective disorder from this document. Phototherapy for seasonal affective disorder is separately addressed under Behavioral Health Policy #037. Coverage indications for UVB were clarified. Clarified coverage exclusion of xenon chloride excimer laser for phototherapeutic treatment of psoriasis. Reviewed 12/06 MPG-Plastic Surgery and Dermatology, no changes in coverage were made. Reviewed 5/07 MPG-Pediatrics, statement regarding a rapid worsening of neonatal jaundice added. Reviewed 12/07 MPG - Plastic Surgery and Dermatology, no changes in coverage were made. 4/08, Updated in accordance with BCBSA policy # 2.01.47, which indicates the use of Xenon chloride lasers and other devices to target UVB phototherapy may be medically necessary to treat mild to moderate psoriasis that is unresponsive to conservative therapy and moderate to severe localized psoriasis, comprising less than 20% body areas. Reviewed 5/08 MPG-Pediatrics, no changes in coverage were made. 11/08, Policy updated to cover PUVA for dyshidrosis diagnosis. Reviewed 12/08 MPG-Plastic Surgery and Dermatology, no changes in coverage were made.

Scientific background, Rationale and References

⁷ PUVA policy issued 12/95 based in part on the American Academy of Dermatology Guidelines of Care for Phototherapy and Photochemotherapy (Journal of American Academy of Dermatology 1994; 31:643-8) Also see the clinical review Photochemotherapy beyond psoriasis (Honig et al., Journal of American Academy of Dermatology 1994; 31:775-90) for additional information.

⁸ Based upon the June/July 1997 Medicare B Health Resource. For additional information see CMS National Policy CIM 35-66 at the following web address: http://www.cms.hhs.gov/manuals/06_cim/ci35.asp#_1_73

⁹ Medicare policy is developed separately from BCBSMA policy. While BCBSMA policy is based upon scientific evidence, Medicare policy incorporates scientific evidence with local expert opinion, and governmental regulations from CMS (Centers for Medicare and Medicaid Services) and the US Congress. While BCBSMA and Medicare policies may differ, our Medicare HMO Blue patients must be offered the same services as Medicare offers. In many instances, BCBSMA policies offer more benefits than does Medicare policy.

¹⁰ Previous coverage criteria used by BCBSMA, prior to 1998, were as follows:

- the infant is full term (over 38 weeks gestation)
- the infant is older than 48 hours
- the infant is otherwise healthy
- the serum bilirubin level is over 14 mg/dL
- the direct (conjugated) bilirubin level is less than 2 mg/dL
- a diagnostic evaluation for hemolytic disease, metabolic errors, and infection has been performed and is negative. This includes:
 - history and physical
 - CBC including smear, WBC with differential, and reticulocyte count
 - total and direct bilirubin
 - maternal and infant blood typing and Coombs test

- urinalysis including tests for reducing substances

¹¹ Updated 3/1/99 to include coverage for PUVA for vitiligo on the face and neck, as severe vitiligo increases the risk for skin cancer. Other areas of the body are more amenable to being covered by clothing.

¹² Updated 1/01 to include coverage for PUVA for vitiligo on the hands, Medical Policy Group 1/01.

¹³ The AAP (American Academy of Pediatrics) practice guidelines on management of hyperbilirubinemia in healthy newborns. For more information see the AAP website at: <http://www.aap.org/policy/hyperb.htm>. See also Pediatrics, volume 114, number 1 July 2004, pp.297 -316.

¹⁷ Ultraviolet-B light therapy coverage is based upon expert opinion.

¹⁸ For FDA-approved indications see: <http://www.fda.gov/cdrh/pdf/k003705.pdf>.

Decision to include coverage for XeCl for treatment of vitiligo was made by the Medical Director; April 2005. Please note this is not an all inclusive list:

- Xenon chloride excimer laser – XTRAC™/Photomedex
- Excimer laser (EX-308)

¹⁹ Based on Blue Cross Blue Shield Association's National policy, *Xeon Chloride Laser Therapy for Phototherapeutic Treatment of Psoriasis*, treatment of psoriasis is considered *investigational* (4/2006 BCBSA review of their National policy).

Rationale

While XeCl phototherapy could be considered a variant of narrow-band UVB as conventionally delivered in a light box, the target patient populations for the 2 therapies are different. XeCl laser therapy, as delivered in a hand-held device, has been used principally for patients with localized disease, involving less than 10% of the body. These patients are generally not considered candidates for light box therapy, due to the risks of exposing the entire body to UV light as a technique to treat localized lesions. These patients are typically treated with topical therapies. Therefore, the safety and effectiveness of XeCl phototherapy must be compared to that of topical preparations. Relevant outcomes include percentage of lesions healed, time to healing, durability of healing, patient compliance with therapy (laser therapy requires multiple office visits), and the long-term side effects of therapy. The side effect of greatest concern is the carcinogenic potential of UVB light exposure, although this risk may be minimized with a hand-held device that spares normal skin.

Published data regarding XeCl phototherapy are limited, and no studies directly compare the outcomes of XeCl phototherapy to either narrow or broad-band UVB as delivered in a light box, or to topical therapies.

Asawanonda and colleagues reported on a pilot dose-response study of 13 patients with stable psoriasis in which a portion of psoriatic plaques, but not all, were treated with varying numbers of treatments at varying dose levels (i.e., fluences). (1) The total treatment period was 10 weeks. Clearance of psoriatic plaques with as little as 1 treatment with moderately long remission was reported. In addition, the authors concluded that fluence was the most important determining factor for success, with higher fluences producing faster and more durable responses. Feldman and colleagues reported on a multicenter study of 124 patients who underwent twice weekly XeCl laser therapy for a total of 10 treatments (i.e., 5 weeks). (2) All patients had localized psoriasis, defined as involvement of less than 10% of body surface. A total of 92 patients completed the protocol, defined either as 10 treatments or complete clearing; the most common reason for drop out was noncompliance, in the form of missed appointments and non-returned phone calls. Of those who completed the protocol, 72% (n=66) achieved at least 75% clearing in an average of 6.2 treatments. The treatment was well tolerated.

While there are no direct comparisons with topical treatment, the results with XeCl appear to be similar to results reported with topical therapy, although the time to healing may be faster. For example, controlled studies of topical calcipotriene reported that about 70% reported marked improvement after 8 weeks of therapy. (3) Controlled studies of tazarotene suggest that around 50% of patients reported complete clearing after 12

weeks of treatment. (4) While durability of response is an important outcome, there are no data regarding this outcome for XeCl phototherapy, although phototherapy in general is thought to have a more durable response than topical therapy. Patient compliance is another issue. In the above study of the XeCl phototherapy, about 32% of the patients dropped out due to noncompliance. While a proposed advantage of XeCl therapy may be a reduced number of office visits compared to light box therapy, patient compliance even with a reduced number of office visits may be an issue for patients who could self-medicate with topical therapy. Further studies directly comparing topical therapy with XeCl laser therapy are needed to clarify all of these issues.

Literature review updates have identified no controlled, comparative clinical studies or studies identifying subsets of psoriasis patients more likely to benefit from XeCl laser treatment. One case series of 80 patients who completed a full course of XeCl laser treatment was identified. (5) This case series was reviewed (in draft and accepted for publication) in the original BCBSA medical policy statement. (2) The final published case series varies only slightly in the final number of patients that completed therapy (80 of 124 patients), but the study results demonstrating clinical improvement are unchanged. The authors also published a follow-up telephone survey of the 80 patients to assess patient impression and satisfaction with XeCl laser treatment. (6)

The same authors prepared a form of meta-analysis that compares the results of the original 80 patients treated with XeCl laser treatment to studies that assess the effectiveness of placebo and other forms of psoriasis treatment. (7) This meta-analysis defined studies involving other forms of psoriasis treatment and placebo groups as a “historical control” to the 80 patients treated with XeCl laser treatment. This meta-analysis found laser therapy more effective than placebo and comparable or more effective to other standard treatments for psoriasis.

One study analyzed the results of 16 patients receiving XeCl laser treatment. For each patient, 2 plaques were selected, and half of each plaque was held as a control while the other half was treated with a single dose of 8 or 16 times the “minimal erythema dose” (MED). (8) Eleven patients showed significant improvement in 1 month, and 5 patients showed minimum response to treatment.

Gerber and colleagues reported on a study of 163 patients in 2 treatment groups. (9) In the first treatment group, 120 patients were treated initially with XeCl laser treatment at the threefold MED and increased by 1 MED until an erythematous reaction occurred on the psoriatic skin. In the first group, 87 of 102 patients completing 13 treatment sessions had 90% or more clearance of lesions. Based on the findings in the first treatment group, the second treatment group of 43 patients had treatment initiated at a MED level in accordance with the epidermal thickness of the psoriatic lesion, as determined by ultrasound, to maximize therapeutic effect while minimizing adverse side effects. In the second group, 34 of 40 patients (83.7%) achieved clearance of lesions in only 7.07 ± 2.15 sessions, resulting in a lower cumulative dose of UVB. Two smaller studies, Taneja (n=14) and Taylor (n=13), also reported significant improvements with XeCl laser treatment in patients with refractory psoriasis in which untreated patient lesions served as the control. (10,11) In Taylor (11), an air-blowing device to part and separate the hair was also used to assist in visualizing the scalp during the XeCl laser treatment. In both studies, most patients experienced some relapse of psoriatic lesions at the treated sites within 6 months.

Finally, Kollner and colleagues compared treatment of patch psoriasis with 308-nm excimer laser, a 308-nm excimer lamp, or 311-nm narrowband UVB at either a slowly increased dosing regimen (15 patients) or an accelerated dosing increase regimen (16 patients). (12) The authors reported no statistically significant difference in PSI scores after 10 weeks in the slowly increased dosing regimen group. Plaque clearance was achieved with fewer treatments in the accelerated dosing increase regimen group; however, patients experienced more blistering and crusting.

While XeCl laser treatment has shown some positive benefits, further study is needed to determine appropriate UVB dosage levels, duration of beneficial effects, and appropriate maintenance therapy in addition to standard treatment versus laser treatment comparisons.

References:

1. Asawanonda P, Anderson RR, Chang Y et al. 308-nm excimer laser for the treatment of psoriasis: a dose-response study. *Arch Dermatol* 2000;136(5):619-24.
2. Feldman SR, Mellen BG, Salam TN et al. Efficacy of 308-nm excimer laser for treatment of psoriasis: results of a multicenter trial. In press
3. Dovonex® (Westwood Squibb): Package insert
4. Tazorac® (Allergen): Package insert
5. Feldman SR, Mellen BG, Housman TS et al. Efficacy of the 308-nm excimer laser for treatment of psoriasis: results of a multicenter study. *J Am Acad Dermatol* 2002; 46(6):900-6.
6. Rodewald EJ, Housman TS, Mellen BG et al. Follow-up survey of 308-nm laser treatment of psoriasis. *Lasers Surg Med* 2002; 31(3):202-6.
7. Rodewald EJ, Housman TS, Mellen BG et al. The efficacy of 308nm laser treatment of psoriasis compared to historical controls. *Dermatol Online J* 2001; 7(2):4. Available online at www.dermatology.cdlib.org/DOJvol7num2/original/psoriasis2/feldman.html
8. Trehan M, Taylor CR. High-dose 308-nm excimer laser for the treatment of psoriasis. *J Am Acad Dermatol* 2002; 46(5):732-7.
9. Gerber W, Arheilger B, Ha TA et al. Ultraviolet B 308-nm excimer laser treatment of psoriasis: a new phototherapeutic approach. *Br J Dermatol* 2003; 149(6):1250-8.
10. Taneja A, Trehan M, Taylor CR. 308-nm excimer laser for the treatment of psoriasis: induration-based dosimetry. *Arch Dermatol* 2003; 139(6):759-64.
11. Taylor CR, Racette AL. A 308-nm excimer laser for the treatment of scalp psoriasis. *Lasers Surg Med* 2004; 34(2):136-40.
12. Kollner K, Wimmershoff MB, Hintz C et al. Comparison of the 308-nm excimer laser and a 308-nm excimer lamp with 311-nm narrowband ultraviolet B in the treatment of psoriasis. *Br J Dermatol* 2005; 152(4):750-4.

²⁰ **2007 Update** based on BCBSA policy # 2.01.47:

A search of the MEDLINE database was conducted on the topic of targeted phototherapy of psoriasis. Articles published between 2001 (the date of the first targeted device approval) through November 2006 were reviewed. Technical literature indicates that handheld narrowband UVB (NB-UVB) delivery devices can be considered similar to conventional phototherapeutic lights since they produce wavelengths of light that are within the therapeutic range. (6) Clinical guidelines from the British Association of Dermatologists state that panel irradiators and point sources are acceptable alternatives to whole-body cabinets or upright panels, with each light source having its advantages and disadvantages. (7) Guidelines on the treatment of psoriasis from the American Academy of Dermatology also indicate that targeted phototherapy is an appropriate alternative to PUVA or UVB (with or without topical or oral retinoids) for the treatment of moderate to severe localized disease. (3) Their guidelines do not recommend phototherapy for limited (mild) psoriasis, erythrodermic/generalized psoriasis or psoriatic arthritis.

Clinical Efficacy

Two blinded and controlled studies compared targeted UVB with standard phototherapy of psoriasis; both used equivalent starting doses and patches matched on either side of the body. (8, 9) One study compared a NB-UVB lamp with cream PUVA in 10 subjects with palmoplantar psoriasis. (8) The UVB lamp and PUVA-treated sides showed similar gradual clearing over the course of 20 treatments, reaching 64% clearance at the end of the 5-week treatment period. In the other blinded study the excimer laser was compared to full body NB-UVB in 16 patients with psoriasis vulgaris. (9) At the end of 20 treatments the PASI scores were equally reduced on the two sides, from a baseline of 11.8 to 6.3 for laser and from 11.8 to 6.9 for non-targeted NB-UVB. A patch comparison in 15 patients with stable plaque also found no difference in efficacy between the 308-nm laser, the 308-nm excimer lamp, and standard TL-01 lamps. (10)

A multicenter open trial of 124 patients with mild to moderate psoriasis (involving less than 10% body surface area) reported effective clearance of lesions among the 80 patients who completed XeCl laser treatment. (11)

Comparison of these results to historical controls found laser therapy to be more effective than placebo and comparable or more effective to other standard treatments for psoriasis (12) Controlled studies comparing targeted phototherapy with topical treatment for patients with mild disease are lacking.

Treatment-resistant plaques

Clinical studies suggest that targeted phototherapy can be effective for treatment-resistant lesions. One controlled patch comparison reported effective clearing (PASI pre 6.2, PASI post 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. (13) The same group reported that 12 of 13 subjects 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. (14) In a recent open trial from Europe, 44 of 54 patients with palmoplantar psoriasis resistant to combined phototherapy and systemic treatments were cleared of lesions with only 1 NB-UVB lamp treatment per week for 8 weeks. (15)

Dosing

Results suggest that targeted dosing may be more effective than dosing based on the minimal erythematous dose (MED) of unaffected skin. One study evaluated dosing in 163 patients (chronic plaque psoriasis and <20% body surface area affected) with the XeCl laser. (16) Initially, 120 patients with mild to moderate localized plaque were treated beginning at 3 times the MED of unaffected skin, increasing by 1 MED unless an erythematous reaction occurred on the psoriatic skin. Of the 102 patients who completed 13 treatment sessions, 87 had >90% clearance of lesions. Based on the findings in the first treatment group, a second group of 43 patients had treatment initiated at a MED level in accordance with the epidermal thickness of the psoriatic lesion, as determined by ultrasound, to maximize therapeutic effect while minimizing adverse side effects; 34 of 40 patients (83.7%) achieved clearance of lesions in only 7.07 ± 2.15 sessions, resulting in a lower cumulative dose of UVB. A patch comparison (described above) found no difference in efficacy between targeted laser, targeted lamp, or standard TL-01 lamps when all were administered at the standard NB-UVB dose. (10) However, when the investigators used an accelerated dosing scheme to compare the two targeted devices (16 patients), clearance was achieved with fewer treatments and half the cumulative dose of the first regime. Thus, targeted phototherapy may allow higher (and more therapeutic) doses of light to be delivered to the lesion in comparison with dosing based on the erythematous dose of unaffected skin. Controlled studies based on the MED of the patch/lesion are needed to determine the most effective treatment and maintenance schedules.

There is concern for the possibility of cancer induction with long-term UVB treatment. PUVA has been associated with increased cancer risk; there is currently no evidence that supports increased risk following extended UVB treatment. (17) Given the higher MED of plaques and reduced exposure of unaffected skin, targeted NB-UVB may have an improved benefit/risk ratio over non-targeted phototherapy for localized psoriasis.

There is currently no evidence to recommend any one targeted or non-targeted NB-UVB device over another. Devices with smaller focal areas may result in more frequent blistering due to “tiling,” the practice of overlapping adjoining treatment zones.

The literature supports the use of targeted phototherapy for the treatment of moderate to severe psoriasis comprising less than 20% body area for which NB-UVB or PUVA are indicated, and for the treatment of mild to moderate psoriasis that is unresponsive to conservative treatment.

Based on this review, evidence is lacking for the use of targeted phototherapy for the first-line treatment of mild psoriasis or for the treatment of generalized psoriasis or psoriatic arthritis.

A search of the MEDLINE database for the period of December 2006 to November 2007 did not identify any evidence that would alter the conclusions reached above. Studies from outside of the U.S./European Union are examining the efficacy of targeted TL-01 lamps. One study conducted a left-to-right comparison of local NB-

UVB versus PUVA paint for palmoplantar psoriasis (3 times per week for 9 weeks) in a cohort of 25 patients. (18) The mean severity index improved by 61% with local NB-UVB and 85% with PUVA paint; 1 patient dropped out of the study because of a phototoxic reaction in the PUVA-paint-treated side. Another study assessed the efficacy of targeted NB-UVB (mercury lamp) alone or in combination with 8-methoxypsoralen cream (8-MOP) in stable psoriatic plaques. (19) For the 10 patients (83%) who completed the study, combined treatment resulted in greater clearance (area under the curve of 51 vs. 37) and longer remission (8 vs. 5 weeks). No studies were identified that compared different types of targeted or non-targeted UVB devices; therefore, the policy statements are unchanged.

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