

A Practical Approach to Home UVB Phototherapy for the Treatment of Generalized Psoriasis

Specialists review the basics of choosing ideal patients for home UVB, delineate key aspects of patient education, and provide detailed information on currently available phototherapy equipment.

By Tina Bhutani, MD and Wilson Liao, MD

Psoriasis is a chronic inflammatory skin condition affecting 2.6 percent of the US population.¹ Topical agents including corticosteroids and vitamin D analogues are usually first-line treatments for mild to moderate psoriasis.² However, other therapies must be considered in patients with more severe disease or when topical steroids become ineffective. Phototherapy is a safe and effective treatment for psoriasis that can be used for more severe cases.³ Types of phototherapy for psoriasis include broadband UVB (280-315nm), narrowband UVB (311nm), or psoralen plus ultraviolet A (PUVA). Although PUVA is extremely effective, it is used less often due to acute side effects such as nausea from psoralen ingestion and a possible long-term increase in cutaneous malignancies. Therefore, UVB phototherapy is most commonly used for psoriasis.

UVB phototherapy is generally offered in an outpatient clinic, which requires patients to travel two to three times a week during business hours for treatment. This makes it relatively time consuming and often inconvenient for patients. To overcome these

drawbacks of outpatient UVB phototherapy, home UVB equipment was introduced in Sweden in the late 1970s.⁴ Despite literature showing home phototherapy to be well tolerated, efficacious, and economical, many dermatologists do not offer home UVB as a treatment option for patients due to the perceived high risk of treatment.⁵

Improved technology has allowed for the evolution of safer home phototherapy equipment with regulatory mechanisms that minimize misuse of treatment.⁵ Patients should receive detailed education on the use of home UVB including goals of treatment and how to recognize adverse reactions. In addition, patient instructions must be individualized, given that each brand of phototherapy equipment has different recommended treatment protocols, safety measures, and

Take-Home Tips. With proper patient education and close monitoring, home phototherapy is well tolerated and efficacious for moderate to severe generalized psoriasis. The only required feature recommended in home phototherapy equipment is the ability to regulate the number of treatments the patient receives. ●

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maintenance requirements. This article aims to provide a practical approach to the use of home UVB phototherapy for treatment of generalized psoriasis.

Choosing Patients for Home Phototherapy

Based on more than a decade of clinical experience at the University of California, San Francisco Psoriasis and Skin Treatment Center, we compiled information on choosing patients for home phototherapy and patient education. Supplemental data on the safety and efficacy of home UVB phototherapy were obtained by literature search using PubMed. English language articles between 1984 and 2010 were found using the key word “home” combined with “UVB phototherapy.” Additional information about phototherapy equipment was collected through individual company websites and through direct contact (National Biological Corporation, Daavlin, and UVBiotek).

A thorough history and physical examination is the first step to identifying ideal patients for home phototherapy.³ UVB phototherapy is appropriate for psoriasis patients with widespread or generalized disease for whom topical therapy is impractical or ineffective. Phototherapy is contraindicated in patients who are photosensitive due to medications or underlying photosensitive disease. Numerous medications can potentially photosensitize patients. Common offenders include thiazide diuretics, furosemide, tetracyclines, sulfonamides, amiodarone, diltiazem, and oral antifungal agents. Retinoids are also photosensitizing, but the oral retinoid acitretin is sometimes combined with phototherapy to augment response; Such combination therapy should be closely supervised by a physician. Care should also be taken with the use of potentially photosensitizing antidepressants, such as amitriptyline or desipramine, as well as antipsychotics like chlorpromazine, and hypoglycemic agents including glyburide and glipizide. If possible, alternative medications should be substituted to prevent phototoxicity. Examples of photosensitive diseases include lupus, rosacea, porphyria, polymorphous light eruption, and vitiligo. Other relative contraindications to UVB phototherapy include current or past history of melanoma or a history of recurrent non-melanoma skin cancers.

Although the risks of home phototherapy are low

and comparable to outpatient treatment, there is a potential for severe erythema, burns, or blistering.⁶ Given concerns for these risks, only reliable patients should be chosen for treatment. Reliable patients have established a good relationship with the caregiver, can follow instructions, and who understand the risks of treatment. Candidates for home phototherapy are those for whom long-term outpatient phototherapy is impractical secondary to scheduling constraints, transportation issues, or cost. If outpatient therapy is at all feasible, it should be first-line, given closer monitoring and dose determination by a health care professional.

The ideal situation is when patients starting home phototherapy have had previous experience with outpatient phototherapy. This ensures a therapeutic response to phototherapy has been demonstrated prior to investment in a home unit. Previous experience with outpatient phototherapy provides an educational experience that decreases the risk for adverse events with a home unit. Patients should be taught the goals of treatment and the concept of suberythemogenic phototherapy in which dosimetry is started conservatively and slowly titrated to prevent uncomfortable burning sensations associated with higher doses.⁷ With the help of phototherapy staff, patients will learn how to differentiate between significant erythema and burning, versus desirable slight pinkening of the skin. This outpatient experience provides a good transition for patients interested in home phototherapy.

Home Phototherapy Equipment

Appropriate candidates for home phototherapy should next work with their medical provider to select a type of UVB panel. Currently the National Psoriasis Foundation recommends three brands of home phototherapy equipment: National Biological Corporation, Daavlin, and UVBiotek.⁸ Ultimately, patients make the final decision on equipment choice. Factors that may influence the decision include cost, size, and machine design (Table 1). For example, small, flat panel machines treat only one side of the body at a time and therefore may require the patient to treat all four sides of the body individually by turning after each dose. The addition of reflecting side panels or wings increases dispersion of UV rays, thus allowing a greater area

Table 1. Home Phototherapy Equipment

	NB-UVB or BB-UVB	Size (H x W x D)	Cost Range	Limiting Number of Treatments	Safety Features
National Biological Corporation Foldalite III • Full body booth • Treatment of entire body surface in 1 session Panasol II • Flat panel with optional reflective wings Panasol 3D • Flat panel with paneled doors	<i>Replace bulbs every 150-250 hours</i> NB-UVB only Both Both	76"x56"x9" (closed) 76"x38"x38" (open) 5.4 ft ² interior space 74.5"x29.5"x4.5" (16.5" D with stand) 74.5"x29.5"x4.5" (30" D with stand)	\$6,990 \$2,590- \$2,990 \$4,590	Controlled Rx Timer: Allows physicians to prescribe certain number of tx (150, 200, or 250) to ensure follow-up. Refills are dispensed by 4-digit code which can be inputted into machine by patient.	• Key locked ON/OFF • Digital timer limits maximum treatment to 10 minutes • Failsafe feature which disables unit in the event of an emergency
UV Biotek Model 1600 • Full body booth • Recommended for skin types 4-6 (darker complexion) Model 800 • Full body booth • Recommended for skin types 1-3 (lighter complexion) Model 100 • Flat panel unit with optional reflective doors	<i>Replace bulbs every 500 hours</i> Both Both Both	83"x38"x8" 83"x38"x8" 86"x22"x5"	\$6,995 \$5,495 \$2,990	Physicians prescribe certain number of treatments at each visit. This is prescribed at each follow-up visit and then faxed to UVBiotek who will contact the patient with re-authorization codes.	• Acrylic safety shield prevents direct contact with UV bulbs • When UVB lamps are on, pressing any button will turn off treatment • If more than 5 minutes chosen for treatment, machine will confirm before continuing
Daavlin UV Series X • Full body booth 7 Series • Flat panel unit with optional panel doors or reflective panels	<i>Replacement bulbs every 200-250 hours</i> Both Both	79"x41.5"x30.5" 78"x21"x12"	\$5,200- \$7,000 \$2,180- \$3,720	Flex Rx: Physicians can prescribe certain number of treatment. Refills called into Daavlin who will provide re-authorization codes.	• Removable safety key • Back up timer allows a maximum time limit inputted by physician.

to be treated in a uniform manner. This allows for fewer treatments and decreased amount of time, but with the tradeoff of increased size and cost. In addition, some panels have more bulbs than others, maximizing lamp output and shortening treatment sessions.

The only required feature that we recommend in home phototherapy equipment is the ability to regulate the number of treatments received by the patients. This prevents misuse and ensures that patients will follow-up regularly in clinic in order to get prescriptions for additional treatment sessions. Each of the above brands provides different methods of allowing such regulation (Table 1).

Since each brand of home phototherapy equipment is designed differently, individual instructions for proper use should be provided according to the type of machine. Variations in patient positioning during treatment, equipment maintenance, and other practical considerations exist between equipment, and this

should be emphasized to patients during orientations. In particular, patients should note that even though lamps may still turn on and appear normal after many accumulated hours of use, the UV energy levels may become so low that effectiveness of the treatments is negated, making recommended lamp replacement highly advisable. With the exception of early lamp failures, it is recommended that all lamps be replaced at the same time when deterioration or failure is due to age. Random lamp replacement will create a "hot spot" and uneven distribution of UV energy, which may result in severe erythema to overexposed areas.

Prescribing Home Phototherapy

Once the patient has chosen a UVB panel, a prescription for the specific machine can be written out. This prescription should be faxed along with a letter of medical necessity, a copy of the last office visit note, patient demographics, and insurance information to

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the respective UVB company. Each company has representatives who will obtain authorization from the patient's insurance and attempt to get the entire cost or at least part of the cost covered. If not covered, each company can also set up financing options to assist patients in paying for the equipment. In our experience, this authorization process can take up to two to three weeks and, therefore, should be initiated as soon as patients are considering home phototherapy. Up to 80 percent of patients do get some type of coverage by their respective insurance company.

Patient Education and Orientation

Prior to starting home phototherapy, patients should be educated about the goals and expectations of treatment. Clinical improvement may take weeks to months, and their psoriasis may occasionally flare despite adhering to the protocol. However, patients can expect an overall improvement in their condition with fewer flares and increased quality of life.

Patients should also be educated about issues relating to safety, adverse side effects, and follow-up. Patients should always protect eyes with UV goggles and cover sensitive areas such as genitals with an athletic supporter. Before exposure, lip balm should be applied to lips. If the face is not involved, sunscreen should also be applied generously to the facial area including ears. It is also important for patients to ensure that all other persons vacate the treatment area during the treatment session to avoid unnecessary exposure to the UV energy of the device. Patients should also be educated on how to deal with adverse side effects. Erythema and mild burning may

Choosing the Ideal Home Phototherapy Patient

- Generalized psoriasis or topicals ineffective
 - Reliable patient, able to follow instructions
 - No photosensitive skin disorders
 - No photosensitizing medications
 - No history of melanoma or recurrent NMSC
 - Outpatient phototherapy is impractical
 - Previous therapeutic response to outpatient phototherapy
- *If patient does not meet criteria, consider other treatments.*

Choosing the Equipment (See Table 1)

- As per patient preference. Consider design, size, and cost.

Prescribing Phototherapy Equipment

- Send to manufacturer:
 - Prescription for specific machine
 - Patient demographics
 - Insurance information
 - Letter of medical necessity
 - Copy of last clinic note

Patient Orientation

- Explain goals and expectations
- Possible side effects and how to treat them
- Treatment protocols for chosen phototherapy equipment
- Machine maintenance

Follow-up Every Three Months

- Screen for adverse events
- Document any medication changes or changes in medical history
- Physical examination to monitor treatment progress and screen for suspicious lesions
- Refill treatments if appropriate

What to Do....?

If the patient experiences burns, blistering or severe erythema?

- Hold treatment until burn resolves
- In the interim, apply a mid- to high- strength topical steroid
- When burn resolves, reduce dose by 50% of last dose and then continue to increase dose as per treatment protocol

If the patient skips treatments or goes on vacation?

- Decrease dose by recommended protocol or restart treatment from baseline if prolonged absence

If the patient is clear?

- Continue treatment at same dose but decrease frequency of treatments until on once weekly maintenance

be treated with emollients and mid- to high-strength topical steroids. For more severe burns or blisters, patients should be advised to immediately see their physician for an evaluation. When adverse side effects occur, home UVB should be temporarily discontinued until skin symptoms and appearance normalize. When home UVB is resumed, it should be at a significantly reduced dose. Finally, the importance of maintaining regular follow-up appointments must be emphasized to patients. These appointments are required to monitor response to phototherapy, adjust dose appropriately, and monitor for any suspicious skin lesions. A written contract documenting this commitment to regular follow-up may assist in highlighting this requirement.

Treatment Protocols & Follow-Up

Although minimal erythema dose (MED) determination and subsequent dose calculation is the formal method of establishing initial dose, this process is often cumbersome and labor intensive.

Therefore, most phototherapy centers have now adopted initial dose determination based on patient's Fitzpatrick skin type.³ Increments of dose increase are also determined by skin type in addition to response to previous treatments. The underlying principle is to increase the UVB dose gradually until the MED is reached and then try to maintain the UVB dose just below the MED (suberythemogenic phototherapy).⁷ This

approach eliminates the need for formal MED testing in most patients. It is also simpler and more efficient than methods using incremental dosages calculated as a certain percentage of the previous dosage.

A standard protocol for UVB phototherapy is three times per week with a minimum of 24 hours between sessions. Treatment every other day is effective for most patients. Patients should be instructed to dose phototherapy as per treatment protocol and use proper technique as taught during outpatient phototherapy and home phototherapy orientation. Moisturizer should be immediately applied following treatment to prevent excessive dryness and subsequent itching.

Again, because different phototherapy machines vary in UV output, different starting doses and dose increments should be employed. The specific protocol should be discussed with patients at orientation, making sure that the patient completely understands the method of treatment. Protocol for dose adjustment based on missed days should also be discussed.

Appropriate clinic follow-up when using home UVB phototherapy is at least once every three months. In addition to response to treatment, patients should be screened for any adverse reactions including recurrent severe burns or blistering. Thorough questioning including any changes in medical history or medications is also critical. Despite no proven scientific risk of increased skin cancers with the use of UVB phototherapy, a full skin examination is important to rule out any suspicious lesions.⁹ Lastly, patient instructions should once again be reinforced and any questions should be answered completely. Additional treatments should be prescribed according to a three-month supply at patient's current treatment frequency.

Discussion

Home phototherapy is convenient, cost-effective, and associated with better quality of life compared to outpatient phototherapy.⁵ Home phototherapy had similar efficacy to office-based phototherapy in a randomized controlled trial involving 195 patients.⁶ For patients undergoing home phototherapy, 82 percent and 70 percent reached Self-Administered Psoriasis Area and Severity Index (SAPASI) 50 and PASI 50, respectively, compared with 79 percent and 73 percent of the

patients receiving outpatient treatment. The overall treatment effect, as assessed by the mean reduction in PASI and SAPASI and increase in quality of life, was significant and similar between the two groups.

However, few dermatologists have embraced home phototherapy. When asked why not, they cite inferior efficacy and higher risk, despite the lack of evidence to support these assumptions.⁴ In fact, with proper patient education and close monitoring of treatment, home phototherapy is well tolerated and efficacious for the treatment of moderate to severe generalized psoriasis.⁵ Reliable patients in whom outpatient phototherapy is absolutely impractical should be considered for treatment.

Education is Key

Patient education is the key to providing safe home phototherapy. Patients should ideally start treatment in an office-based setting and then transition to home treatment. This provides a unique educational experience in which patients learn to optimize phototherapy while preventing adverse reactions. Home phototherapy orientation should also be individualized according to patient and type of equipment being utilized. As shown in this paper, large variability exists in the range of available phototherapy machines, and this should play a role during patient education. Lastly, close patient follow-up by a physician with a limited number of regulated treatment sessions prescribed between visits will provide the additional care needed to optimize home UVB phototherapy. ■

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