# Guide to Phototherapy: Narrowband UVB

Elisabeth G. Richard, MD
Light Therapy for Skin Disease



lightandlaser.com
410-847-3700

Sunlight has been known to have a beneficial effect on various skin diseases, in particular psoriasis, for several centuries. Almost a century ago this was found to be due to the ultraviolet component of sunlight and since then there has been much study of phototherapy (photo + light).

## What is Ultraviolet Light?

Ultraviolet (UV) light consists of wavelengths of light found in sunlight which are shorter than visible light. It is called ultraviolet because it begins next to the violet end of visible light. There are several types of ultraviolet light and the one used in this treatment is UVB light. Two sources of UVB phototherapy are used to treat skin disease: narrowband UVB and broadband UVB. Both are available for use depending on the circumstances.

You will receive **Narrowband UVB**, the most common form of phototherapy used to treat skin disease. Narrowband refers to a specific limited set of wavelengths of UV light, 308 to 312 nm, that has proved to be the most beneficial component of natural sunlight for treating skin disease.

UVB light is the portion of sunlight responsible for producing a sunburn, a suntan, burning of the eyes, skin cancer and aging changes in the skin. However, it is also the waveband that is most effective in treating diseases of the skin. In narrowband UVB phototherapy, we aim to maximize the treatment benefits of UVB light and minimize the short and long-term problems that can result from exposure to this light.

## How Does Ultraviolet Light Affect Skin Disorders?

There has been much research into how ultraviolet light produces a beneficial effect and there appear to be three mechanisms:

1. Ultraviolet light slows down the multiplication of skin cells by suppressing formation of DNA in cells. This is the main way in which it improves psoriasis.
2. Ultraviolet light alters the function of immune cells in the skin but in doing so does not appear to affect our normal immunity. This is probably the mechanism whereby ultraviolet light helps some types of eczema.
3. Ultraviolet light causes darkening and thickening of skin so that less light can enter the skin. Disorders in which the skin is more sensitive to light than is normal are probably helped via this mechanism.

## The Treatment

The initial exposure dose is small, and hence the treatment is brief, but as your tolerance to the light increases the exposures are progressively increased. Treatments are given two or three

times each week in order to clear the skin. Weekly or twice weekly treatment is usually required to maintain a clear state.

In the office, prior to each treatment, you must apply a moisturizing cream (an emollient) to the affected skin. Moisturizing cream is provided and the nursing staff can assist you with application if necessary. Emollients facilitate the transmission of light in all of the disease states we treat, thus will increase the

effect of the light treatment and speed the time to improvement. Emollients also decrease the dryness and itching that may occur after phototherapy.

**To maximize efficacy of treatment, you must apply emollient to your affected skin while the office immediately before each treatment.**

**The Nursing staff will offer assistance and/or assist with application This our required protocol for all patients and all disease states.**

## Excimer Laser

The excimer laser is another way to deliver narrowband UVB light. It can be used to treat localized psoriasis and localized vitiligo. It delivers targeted narrowband UVB to affected areas.

## Short-Term Problems of the Treatment

The UVB portion of sunlight is responsible for most of the changes we see in our skin after we have been sunbathing. Therefore, most of the problems of narrowband UVB phototherapy are the same as those we experience after exposure to sunlight.

### 1. Sunburn

UVB light will produce pinkness and redness of the skin. We do not aim to produce redness or blistering of the skin but occasionally that will occur due to unexpected responses of the skin to UVB light. If you are red, treatment will be suspended until the sunburn has cleared. If you became red after the last treatment, tell the nurse and your dose of light will be modified.

### 2. Suntan

All people who are able to tan will do so as a result of exposure to UVB light. Many people regard this as a bonus but some people do not like to have a darker skin. The tan will fade over 4-6 weeks after treatment has stopped.

### 3. Dryness

UVB light does tend to dry the skin but this can be easily alleviated by applying a moisturizing cream in the office just before treatment.

### 4. Freckles

These flat, brown spots occur in susceptible individuals just as they do following exposure to sunlight. Freckles do tend to fade once treatment has stopped but can be re- activated by subsequent exposure to sunlight.

### 5. Eye Damage

UVB light can sunburn your eyes. This problem is completely preventable by wearing UV-blocking goggles while in the phototherapy booth. These goggles are provided.

**Eye protection must be used during treatment.**

## Potential Long-Term Problems of the Treatment

Like the short-term problems, the potential long-term problems of phototherapy are the same as those seen in response to natural sunlight:

### 1. Skin Cancer

There is medical evidence that natural UVB light produces skin cancer. Narrowband UVB has been used as a therapy for skin disease since the 1990s. Long term investigations have failed to find a link between narrowband UVB phototherapy and skin cancer. Regardless of this comforting finding, we must assume that narrowband UVB phototherapy will add to the cumulative effect of exposure to sunlight and all people should take precautions to reduce risk of skin cancer:

- Male patients should wear briefs or athletic supporter during treatment if their skin disorder does not involve the genital area because skin in this area is very sensitive to ultraviolet light.
- If your skin disorder does not involve the face, apply a sunscreen to this area before treatment because facial skin already receives a heavy exposure to sunlight and it is unwise to increase the exposure.
- A full body skin cancer screening should be performed yearly.

### 2. Aging Changes

UVB light in natural sunlight appears to be a main cause of premature aging of the skin. While there is no proven link between narrowband UVB phototherapy and these changes, we must assume there is a risk. The same precautions taken to avoid skin cancer apply equally well to aging changes.

## A Few Helpful Hints

- If your skin disorder involves the scalp, you have to help the light reach it. Short hair is obviously one answer. Hair bands and bobby pins should be used to hold hair off the face and neck.
- If the disorder affects the skin under the nails, do not paint your nails.
- Scale on the skin tends to block UV light from penetrating. This can be overcome by applying an emollient in office and soaking at home to remove excess scale.
- Regular, punctual treatments are the key to success with phototherapy. Missed treatments simply delay a good response and sometimes lead to failure of therapy. If you are having problems keeping appointments, discuss the matter with the physician so a fresh approach can be developed.

## Do You Need to Be Treated in the Office?

UVB light is present in sunlight and is emitted by some sunlamp bulbs used at home and in suntan parlors. A reasonable question is: Why be treated in a doctor’s office? The answer is very simple: You are more likely to get better.

Natural sunlight certainly improves some skin disorders but it seldom clears them completely. Actually, it is probably not just sunlight which is beneficial but also the relaxation and enjoyment that is associated with outdoor activities playing a significant role. Sunlight, of course, is not available to us on a regular year-round basis and that is a limiting factor. Sunlamps used at home or in suntan parlors are typically

only partially helpful for treating skin disease because they emit wavelengths of light are not the most beneficial and therapeutic for psoriasis or other skin conditions.

## The Next Step

If you decide to proceed with narrowband UVB phototherapy, the next steps are:

- Discuss questions you may have about treatment with our nursing staff or Doctors.
- Arrange a regular schedule of phototherapy treatments.
- Maintain a regularly scheduled annual skin cancer screening with a dermatologist.

**Remember: we are here to help. If in doubt, ask!**