

# GUIDE TO PHOTOTHERAPY

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 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 treatment is called UVB light. Two sources of UVB phototherapy are used: broadband UVB and narrowband UVB and both are available for use depending on the circumstances.

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 ultraviolet 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?**

Recently 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**

Prior to starting treatment, your response to ultraviolet light will be tested to determine a safe starting dose. This test involves exposing eight one-inch squares on your back to different doses and the result is evaluated the following day. The test takes about 20 minutes.

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

Prior to each treatment you should apply a moisturizing cream, such as Aquaphor or Eucerin, to the patches of psoriasis since this will increase the effect of the light treatment.

## **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 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.

### **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-opaque goggles while in the light box.

## **EYE PROTECTION MUST BE USED DURING TREATMENT**

### **POTENTIAL LONG-TERM PROBLEMS OF THE TREATMENT**

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

#### **1. Skin Cancer**

UVB light produces skin cancer in laboratory animals and there is much evidence that sunlight causes this problem in humans. However, several large investigations have failed to find a link between UVB phototherapy and skin cancer. Regardless of this comforting finding, we must assume that UVB phototherapy will add to the cumulative effect of exposure to sunlight and all people should take precautions to reduce risk of skin cancer:

- o Avoid prolonged or excessive sunbathing unless it is a prescribed part of maintenance treatment.
- o Male patients should wear an athletic support during treatment if their skin disorder does not involve the genital area because skin in this area is very sensitive to ultraviolet light.
- o 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.
- o Any new lump or bump on the skin should be brought to the attention of the physician.

#### **2. Aging Changes**

UVB light in sunlight appears to be the main cause of premature aging of the skin and, again, while there is no proven link between 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**

1. 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.
2. If the disorder affects the skin under the nails, do not paint your nails.
3. Scale on the skin tends to block UVB light from penetrating. Try to remove as much scale as possible before each treatment by soaking or applying an emollient.
4. 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 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.

Sunlight certainly improves some skin disorders but it seldom clears them completely. Actually, it is probably not just sunlight which is beneficial but the relaxation and enjoyment that is associated probably plays 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 not helpful for treating skin disease because they emit light that does not have a beneficial effect on psoriasis or other conditions.

## **THE NEXT STEP**

If you decide to proceed with UVB phototherapy, we will proceed as follows:

Discuss any questions you may have about the treatment

Arrange a schedule of treatment

**REMEMBER WE ARE HERE TO HELP. IF IN DOUBT, ASK!**