

involvement considered moderate, and more than 10% BSA involvement considered severe disease. The Psoriasis Area Severity Index is a more specific means of quantifying the extent and severity of psoriasis, as it takes into account not only BSA but also intensity of redness, scaling, and plaque thickness, ultimately producing a score from 0 (no disease) to 72 (maximal disease severity). The Psoriasis Area Severity Index is frequently used in research for monitoring response to treatments, and it is also utilized by dermatologists in general practice and specialized psoriasis clinics.

Psoriasis is an autoimmune condition stemming from inappropriate activation of cutaneous T cells and dendritic cells, with subsequent release of inflammatory cytokines such as interleukin 1 (IL-1), IL-6, IL-12, IL-17, IL-23, and tumor necrosis factor- α . These chemical signals are responsible for keratinocyte hyperproliferation manifesting as characteristic scaly plaques, and they also contribute to the rampant inflammation underlying a number of systemic disease associations, including metabolic syndrome, heart disease, and arthritis. To combat the inflammation at the root of this condition, a number of topical and systemic medications have been created and utilized with varying success.

In addition to medication, treatment with light waves has proven to be an effective and largely safe intervention that can lead to significant improvement in—or even complete clearance of—associated psoriatic skin lesions. Phototherapy refers to the treatment of medical conditions via controlled exposure to certain types of electromagnetic radiation, in particular, ultraviolet radiation, which includes wavelengths ranging from 200 nm to 400 nm on the electromagnetic spectrum. Although the use of light in medicine is truly an ancient concept extending thousands of years into the past—to the ancient Greeks, Egyptians, and Chinese—focus in modern times began in the late 19th century. Since its rediscovery, advancements in science have enabled

more measured application of light, allowing practitioners to choose the specific wavelengths of radiation that they wish to apply, and offering various topical or systemic means of modifying or amplifying the patient's response to these treatments.

Psoralens are naturally occurring photosensitizing agents that, in combination with UVA radiation (PUVA), have demonstrated significant benefit in the treatment of psoriasis and other inflammatory skin conditions. With wavelengths ranging from 320 to 400 nm, UVA radiation is capable of penetrating deeper into the skin than UVB light and can thus assert effects on a wider variety of cell types, including dermal mast cells, granulocytes, dendritic cells, T lymphocytes, fibroblasts, and endothelial cells, in addition to the more superficial dendritic cells and keratinocytes of the epidermis.¹⁵⁴ UVB comprises a range of shorter wavelengths from 280 to 320 nm and is less capable of penetrating the epidermis than UVA is. Thus, its effects are typically restricted to epidermal keratinocytes and dendritic cells. Although the entire UVB spectrum was used in initial UVB-based phototherapy (broadband UVB; BB-UVB), action spectrum studies have since determined that wavelengths between 304 and 313 nm produce the most therapeutic effect in clearing psoriatic plaques, whereas wavelengths from 290 to 300 nm, in fact, have very little benefit and mostly contribute to the development of sunburn.¹⁵⁵ This revelation led to the development of a more precise treatment termed *NB-UVB*, which has now been used for many years with great efficacy. Further variations of UVB administration have been developed over the years and are being utilized and further investigated today, including various lasers, light-emitting diode lights, and combinations with other medications/preparations. Even visible light (400–700 nm) has been explored as a treatment for psoriasis and will be discussed alongside other noted therapies in the subsequent text.