

When Friends or Patients Ask About . . .

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Suntanning Centers

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THE DEEP-TANNED look is "in." Americans, perhaps in emulation of Hollywood stars, seem to associate a deep tan with physical attractiveness, good health—even happiness. It is this desire for a golden tan that has stimulated US businessmen to develop the concept of "tanning centers," where people can walk in and get a series of exposures to ultraviolet light (UVL) to develop a suntan. The clients seek golden tans, the owners reap golden revenue, but the long-term effects for the skin of the patient-client are not nearly as bright.

The Fast Buck

The first US tanning center started in Arkansas in 1978. New centers are now opening at a rate of ten per week. Locations are not limited to cold, cloudy climates but include the sunbelt as well. Evidently, many people prefer the convenience of spending two or three minutes in an air-conditioned booth several times a week to spending many hours at the beach to develop the same deep suntan.

Tanning centers are a big business, with some companies providing franchising material, some acting as con-

sultants, and others being suppliers. Tanning salons can be put in beauty parlors and can even be made to be coin-operated. They may increase their revenue by selling vitamins, health foods, cosmetics, and T-shirts, in addition to offering their tanning facilities.

Typical customers are young professionals who are interested in "looking good." A great variety of gimmicks are used to entice new clients, from special introductory rates and gift certificates to commissions for referrals. Nationally, the price for a 20-visit membership varies from \$35 to \$55, or \$1.75 to \$2.75 per visit. This adds up to a possible gross income of \$6,300 to \$9,900 per booth per week. Well-run salons may ask clients to fill out a screening form, noting the type of complexion and any past history of sunburn. Sunlight bulbs are commonly used, emitting the suntan-sunburn spectrum of UVL from 290 to 320 nm, with little radiant heat. Booths are lined with reflective material such as Mylar or polished aluminum. Once the client has completed his initial 20 visits, he may have obtained the desired suntan, but he must continue "maintenance treatments" or his suntan will fade within a few weeks. Thus, a client must get repeated UVL exposure throughout his life to maintain a "healthy tan." But just how healthy is such a suntan?

How Damage Occurs

Suntan and sunburn are caused by the same invisible portion of the sun's rays, the so-called erythemagenic spectrum, which can be duplicated with modern sunlight fluorescent bulbs. Maximum erythema occurs 24 hours after such exposure, and clinical suntan occurs after two to three days. The familiar suntan is due to two basic factors: immediate pigment darkening (IPD), which is due to oxidation of preformed pigment, and melanogenesis, which is the formation of new melanosomes and melanin. This process encompasses many changes stimulated by the appropriate UVL, including increased numbers of melanocytes (pigment cells), increases in the size of melanocytes, and production of pigment particles. Exposure to the erythemagenic spectrum also produces cellular proliferation of the epidermis that lasts from seven to ten days. The epidermis actually becomes thicker owing to increased mitoses. The entire suntan response may be considered the skin's method of affording future protection against further UVL insult, since repeated exposure to such radiation

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induces solar or actinic degeneration and can ultimately produce skin cancers. The only diseases for which such UVL in increased dosages has proved beneficial are psoriasis and pityriasis rosea. Such UVL probably worsens the long-term prognosis in patients with acne, and such patients should be discouraged from seeking this treatment. Exposure to UVL may result in photosensitivity reactions in patients taking certain drugs (tetracyclines, especially demethylchlor-tetracycline, griseofulvin, chlorpromazine hydrochloride as well as thiazides and sulfonamides) and may worsen or cause recurrence of light-sensitivity diseases, such as porphyria cutanea tarda, polymorphous light eruption, lupus erythematosus, and, in some instances, psoriasis.

Solar degeneration of the skin produces wrinkling, atrophy (thinning of the skin), hyperpigmented and hypopigmented macules, telangiectases, yellow papules and plaques, and solar keratoses. The latter are premalignant lesions that exhibit the same type of abnormal cellular changes seen in frank skin cancers, but are limited to the epidermis. When these changes extend through the basal cell layer into the dermis, basal cell or squamous cell carcinomas result. These changes from repeated sun exposure are seen frequently by the practicing physician in the leathery skin of sailors, construction workers,

farmers, and sunworshippers.

The UVL actually produces an alteration in the dermal collagen and elastic tissue, forming free radicals within the skin and decreasing DNA, RNA, and protein synthesis. Although recovery usually occurs after an initial dose of UVL, repeated exposure causes the amount of cell loss to lag behind cell production, resulting in acanthosis and eventual formation of skin cancer.

There is clear epidemiologic evidence implicating solar radiation, whether its source be sunlight bulbs or natural sunlight, as a factor in inducing human skin cancers. Skin cancers occur more frequently on sun-exposed parts of the body. Typically, dark-skinned persons, with increased protective pigmentation, are more resistant to skin cancers. Degenerative changes of the skin, such as wrinkling and dryness, are more frequent in light-skinned persons living in areas of intense UVL (eg, Texas, California, and Florida) and in persons working outdoors. The incidence of three of the most common types of skin cancers—basal cell carcinoma, squamous cell carcinoma, and even the dreaded malignant melanoma—is higher on sun-exposed parts of the body.

Clearly, the more solar irradiation a person gets, the higher his chances are of having a skin cancer develop sometime in the future. A person of

swarthy complexion who has had a great deal of UVL exposure may not show development of skin cancer until he is 60 years old, although he will show typical aging changes before then. If he is of Celtic ancestry, with blue eyes and fair skin, cutaneous malignant neoplasms may arise much sooner.

Erythemagenic UVL can also cause severely painful interstitial keratitis if the suntanner is not using fully effective protective eye-goggles.

The Physician's Role

Many of our patients will continue to overindulge in cigarette smoking, high-calorie and high-cholesterol foods, sedentary behavior, and other "high-risk" life-styles, despite the advice that these activities may shorten their lives or lead to serious debility. In most cases, however, the patient is aware of the increased risk and has made the decision to risk the consequences of his indulgence. The problem for the person in quest of the golden tan is that he may not be aware of future detrimental consequences of repeated exposure to UVL. It is the physician's duty to inform patients of the great dangers of repeated assaults on the skin by harmful UVL, whether its source is the ancient sun or the new neighborhood suntanning salon.