ACNE

***A**cne* is a common inflammatory disease of the skin that occurs in dermal areas where sebaceous glands are the largest, most numerous and most active (the face, back of the neck and the upper trunk).

The physiological process that creates *acne* begins with a lipokeratinous plug (comedo or blackhead) that partially or wholly obstructs a pilosebaceous orifice. As the process continues, the sebaceous duct ruptures and sebum is spilled into the surrounding cells instead of coming to the surface. In reaction to the sebum irritation, the surrounding tissues isolate and contain the sebum in a non-inflammatory cyst. A superficial pustule that blocks the pilosebaceous orifice caps this cyst. As the process continues to develop, bacteria incubate within the cyst, creating by-products that cause additional chemical irritation of the tissues, with attendant destruction and displacement of epidermal cells and the formation of scar tissue. In the last stage of development, canalized inflamed lesions and infected sacs develop. Canalized lesions most frequently occur on the face, shoulders, upper trunk, and upper arms.

Contributory factors to the severity and incidence of *acne* vary. Very humid and warm environments may produce *tropical acne*, characterized by explosive, severe, and generalized eruptions. Cold winter weather may produce exacerbation of the more usual variety of acne, and may improve during hot summer temperatures. Drug consumption or diet may play a role in *acne* development. Bromides and iodides, for example, are notorious for precipitating acne-like eruptions, and chocolate, nuts, cola drinks and sometimes milk consumption (in excessive amounts) appears to aggravate *acne* already present. The trauma to the skin tissue resulting from clumsy attempts to extrude blackheads or superficial cysts, the constant touching of lesions or too much washing may increase the damage arising out of *acne* by forcing sebum into surrounding tissues, thereby accelerating development and fostering scarring. Acne-like eruptions are often associated with menses, with exacerbation of already existing *acne* occurring before, during or just following the menstrual period.

Characteristically, the onset of *acne* is usually just before or during puberty. Early lesions and a family history of acne may be precursors of severe *acne* development.

In its mildest form, *acne* usually persists for at least a year and often continues through early adulthood. When the syndrome is severe, *acne* may continue to be troublesome through middle age and beyond.

Treatment

Successful clinical treatment of *acne*, in the second and third stages, has been based on the phonophoresis of vitamin E (tocopheryl) oil into infected tissues. The ultrasound itself is directed at killing bacteria that may be present, while the phonophoresis is directed at facilitating better organization of the collagen that is collecting to form scar tissue, to create tissue closer to normal structure and to prevent keloids from forming.

Application:

- Preset the ultrasound unit to provide a 3 MHz pulsed waveform, at 1.2 W/cm².
- Slowly sweep the ultrasound head over a one to two-inch square area of skin for up to six minutes. If a larger area is sounded, the time may be increased to eight minutes. Use vitamin E oil as the coupling agent.

If teeth lie under the surface being sounded, a slim piece of cardboard, or a plug of dental cotton, should be placed between the teeth and the cheek to prevent the sound from affecting the teeth and any metal fillings lying within.

As few as three or four treatments may be required to arrest an exacerbation of *acne*. Severe cases of *acne* may require more than a dozen treatments (refer to **Ultrahigh Frequency Sound** (Ultrasound), Bacterial Infection Eradication).