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Warts

Warts are very common and are caused by infection of the skin by the human papilloma virus (HPV). There are several different types of warts caused by numerous different strains of HPV. Warts most commonly appear on the hands, feet, genitalia, face, and legs but can appear on any part of the body. There are no specific medications that directly kill HPV. Also, the normal appearing tissue surrounding the wart is also usually infected with the virus. The treatments available for warts are aimed at both destroying the infected wart tissue and stimulating an immune response to help your body fight off the virus. Furthermore, the virus is able to "hide" in the most upper layers of skin to avoid your immune system. This makes the treatment of warts very difficult and often frustrating for both patients and doctors. Multiple treatments are usually needed and are successful only about 75% to 80% of the time.

1. Cryotherapy - This is the most commonly used treatment and involves freezing the wart with liquid nitrogen $(-196^{\circ}$ Celsius). It is uncomfortable, but usually tolerable to older children and adults. It often results in a blister or crusty scab that will fall off in 2 to 3 weeks. It usually requires 3 to 4 treatments and is often less effective for large warts on the bottom of the foot.

2. Salicylic acid - (over-the-counter Compound W, Duofilm, or Occlusal HP; prescription Mediplast) This has a lower cure rate for warts, usually about 30% to 40% after 3 to 4 months of daily treatment. Each day after a shower or bath, the wart is filed with a nail file or Emory board and the medication is applied, followed by duct tape. The biggest advantage is it can be done at home and does not hurt. It can also make your warts go away faster if this is done at home in between treatments.

3. Electrosurgical Destruction - This is burning the wart out with an electric needle. It is painful and requires an injection of numbing medicine. It has a success rate of about 50% with one treatment. It can often leave scars, but is sometimes the only treatment that will work for large warts or warts on the bottom of the feet.

4. Squaric Acid Immunotherapy - This chemical is similar to poison ivy. You are sensitized to the chemical by applying it to the inside of the upper arm, and then when you come back in 2 to 4 weeks it is applied to the warts. You get an itchy rash where the medication was applied. This rash is due to your immune system coming into the area, and this treatment helps your body "see" the virus which is "hidden" in the skin and fight off the warts. It usually takes 5 to 8 treatments, but it does not hurt. It is one of the more commonly used treatments for small children.

5. Laser Surgery - This treatment is painful at the time of treatment, but the bad pain only lasts a few seconds and decreases over the next 24 hours. It leaves a blister, crust, or ulceration that takes about 1 to 2 weeks to resolve. It can leave scars, but usually does not. It usually takes 3 to 4 treatments. Ice and topical numbing creams can help decrease the pain.

6. Bleomycin - Bleomycin is an anti-cancer drug that can be injected into resistant warts. It is painful (so would require an injection of numbing medicine) and relatively expensive. It usually requires 3 to 4 treatments, but has a cure rate of about 98%. It is usually only used for warts that have been resistant to several other treatment modalities.

7. **Trichloroacetic acid** - This is a very strong acid which is applied in the doctors office. The wart "frosts" or turns white after application. It does not hurt during the immediate application, but begins to burn about 2 to3 minutes later. It can be used to treat children very quickly before any pain starts. It usually requires 3 to 4 treatments and is often less effective for larger wart.