

Warts

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What are they?

Several varieties of warts exist. These include the common wart (*verruca vulgaris*), the foot wart (*plantar wart*), flat warts (*verruca plana*), and genital warts (*condyloma acuminata*).

Common warts most commonly occur around the nails, on the fingers, on the back of the hand, and on the elbows and knees. They are especially likely to be found in those sites where the skin has been broken or damaged, such as with chronic biting of fingernails.

Foot warts occur almost entirely on the soles. Because this is the plantar aspect of the foot, such warts are called plantar warts. Plantar warts show a marked tendency to cluster and sometimes this cluster may occupy an area the size of a quarter or larger. These clustered warts are known as *mosaic warts*. Plantar warts do not stick up above the surface skin as much as hand warts, because the pressure of walking on them tends to flatten them and push them back into the skin. Often black dots, representing the blood vessels which feed the wart, are visible. Plantar warts are most likely to occur in those who sweat heavily and in those who, through extensive walking or exercising, tend to irritate the soles of the feet.

Flat warts are much smaller and are less rough surfaced than hand or foot warts. They tend to grow in great profusion so that 20 to 100 may be present at any one time. They can occur anywhere, but in children they are particularly common on the face. In adults they are most often found in the beard area in men and on the legs in women. Shaving with resultant skin irritation probably accounts for these locations in adults.

Genital warts have become the most common sexually transmitted disease. They may occur as small flat bumps or they may be thin and tall. In all cases they are quite soft and lack roughness or scale on the surface. These warts can occur on the genitalia, around the anus, and within the rectum. In women they may also occur within the vagina and on the cervix.

What causes them?

Warts are caused by a viral infection of the cells in the outermost layer of skin. The name of the virus is the *human papillomavirus* (HPV). The presence of HPV causes the infected epidermal cells to multiply very

rapidly, resulting in the formation of a small bump on the skin at the site of infection. Each of the four types of warts mentioned is caused by a different, but closely related, member of the human papillomavirus family.

Who gets them?

It is unknown exactly how many people have warts although it has been estimated in young adults to be 10%. Some individuals are inherently more susceptible to HPV than are others. Just as some people catch colds very easily, others develop warts very easily. In the otherwise normal population, those who are allergy-prone seem to be particularly predisposed toward the development of warts. Patients who are immunosuppressed by certain medical conditions and those who have to take medications such as prednisone also are more susceptible to HPV infection.

In addition, HPV infection occurs more easily if the exposed skin has been traumatized or damaged in some way. As noted above this helps to explain the high frequency of warts in children who bite their nails or adults who scrape and scratch their hands frequently.

What are the symptoms?

Warts are usually skin colored and feel rough on the surface when touched. Generally warts do not cause any other symptoms. The main exception is plantar warts which are painful when located on the sole of the foot. Genital warts may be itchy, occasionally bleed, or become tender to touch.

How do you prevent them?

Warts are probably passed from person to person, but because the time from initial contact to the time the warts have grown large enough to be recognized is generally several months, it is often not possible to identify the source of infection. However, the risk of catching hand, foot or flat warts seems small. Doctors do not take special precautions when handling these warts and patients do not need to either. Thus there should be no concern about carrying out everyday activities such as handshaking and involvement in

contact sports. On the other hand, genital warts are highly contagious to all sexual partners. There is at least a 50% chance of transmitting infection in a single sexual contact. There is a vaccine recommended for girls age 9-26 to prevent infection with 4 severe types of HPV which can lead to cervical cancer.

Can they be treated?

Usually warts tend to disappear without treatment over a period of several months to several years, on average about 18 months, probably as a result of immune function. Moreover, few bad consequences occur as a result of HPV infections, the notable exception being genital warts in women. However, since warts can be spread to new locations and can be spread to others, it is probably appropriate, but not always necessary, to treat warts. Larger warts of long duration, and plantar, genital, and hand warts near the fingernails are the most difficult to treat.

Unfortunately, there is neither a specific nor a universally effective treatment for warts. Almost any imaginable treatment has been tried, including many "folk remedies", but historically the destructive methods have been used most. Newer treatments are being aimed at stimulating the body's own immune system.

- **Local heat** has been used by physicians through the years when other methods are not appropriate, especially for plantar warts. The feet can be soaked in hot water at a temperature of 110-113F for 15 minutes once per week for six weeks. There are very few side effects, but results are inconsistent.

- **Occlusion therapy** can be tried especially on warts surrounding finger and toenails. A nonbreathable tape is applied for a week, removed for 12 hours, and then reapplied. This process is repeated for many weeks until the wart is gone. Again, results are inconsistent.

- **Topical acids** (*salicylic, lactic, trichloroacetic*) may be applied in the office or can be carried out at home by the patient or parent. After soaking the wart in water for 5 minutes, over-the-counter preparations (Compound W, Duofilm, Duoplant, TransPlantar, etc.) can be painted on the wart being somewhat careful to avoid surrounding normal skin. After the liquid dries, one inch wide adhesive tape is used to cover the wart. Every two days the tape is removed, the wart is rubbed flat with an emery board, and the process is repeated. It results in very little discomfort, but takes many weeks of consistent use to obtain satisfactory results.

- **Cryotherapy** has become one of the most popular treatments for warts. The wart is frozen using *liquid nitrogen* which essentially creates an area of frostbite around the wart. Cryosurgery can be uncomfortable, but it isn't usually too painful. The

freezing itself is somewhat numbing. Afterward, you may feel a burning sensation as your skin thaws out.

Typically, the area is red for a couple of days, and then a blister may form under the wart, possibly even a blood blister. The blister then peels off in a week or two. This method leaves little or no scar, although the treated skin may be a bit lighter than the skin around it. However, you may need several freezing treatments before the wart is completely removed.

- **Electrosurgical desiccation** has the advantage of complete removal generally during a single office visit. However, this treatment requires local anesthesia and frequently leaves small scars.

- **Local chemotherapy** has had variable success. *Podophyllin* has been used for genital warts and can be administered at home. Despite excellent initial response, recurrence rates are high. Using the anti-cancer drug *bleomycin* injected individually into each wart can be effective but is very painful. *Fluorouracil* is applied directly to the wart but is very irritating to surrounding skin and causes significant redness. It has been most effective for flat warts on the face.

- **Laser therapy** represents an excellent way to destroy some types of warts but it is more expensive and requires injection of local anesthesia.

- **Immunotherapy** which attempts to enhance the body's own rejection mechanisms is theoretically attractive. However, to date the rates of clearing were no higher than with other topical treatments.

Are there complications?

Generally there are no complications from HPV infection other than cosmetic concern and pain in some plantar warts. However, genital warts in females can trigger cervical cancer and in males rarely can lead to penis cancer. In some cases genital warts can be so large in pregnancy that vaginal birth is complicated.

In summary

- Warts are caused by the human papillomavirus (HPV).
- Common warts are frequently found in areas where the skin has been damaged.
- Warts can be hard to treat and frequently recur.
- Cryotherapy is often the preferred therapy since it is easily administered and non-scarring, but may require repeated applications.