

1. WATCHFUL WAITING

Maybe the best option because most warts are self-limiting and do not need to be treated medically. Especially with children, the option of treatment should be set against the good chances of a spontaneous cure.

Furthermore, treating warts is frustrating, both for you and for us. Even when treated well, 3 out of 10 times the wart does not go away after several treatments or comes back. Therefore, an important component of wart treatment is persistence. Any individual approach should not be abandoned too quickly. There are dozens of treatment options available which illustrates the unfortunate notion that no one remedy outshines any other.

If you have warts that are painful or spreading, or if you are bothered by the way they look, your treatment choices include:

2. SALICYLIC ACID (FDA-approved)

Many over-the-counter preparations are available in the form of topical solutions, gels, pads, patches, or plasters containing up to 40% salicylic acid. We generally do not use the 40% preparations in younger children but may use them in teenagers, who have thicker skin. These preparations are inexpensive and may be combined with other therapies.

How well it works: The advantages of salicylic acid include **cure rates of 60%–80%.**

Directions: Salicylic acid requires daily applications for weeks or months to be effective. Every night for at least 6 weeks, do the following:

- Soak the wart in hot water for 10 minutes,
- Rub surface of wart gently with a mild abrasive such as a pumice stone, callus file, or emery board,
- Dry thoroughly,
- Apply some **Compound W**® gel (17% salicylic acid) or **Duofilm**® fluid (17% salicylic acid and 15% lactic acid),
- Cover the wart and gel application with **Mediplast**® (40% salicylic acid pads with adhesive backing) so that the pad slightly overlaps the wart,
- Remove the pads each evening, soak in hot water, and then reapply.

The treated wart should turn white and look fluffy. Normally improvement can be seen after 4 weeks of treatment. Maximum effect occurs after 6 to 12 weeks of use.

Safety in Pregnancy: C. Warning: Contraindicated in pregnant and nursing women. The possibility that a woman of childbearing potential is pregnant at the time of institution of therapy should be considered. A negative result for a pregnancy test should be obtained within 2 weeks prior to therapy, which should begin during a normal menstrual period.

3. CRYOSURGERY = Freezing (FDA-approved)

How well it works: Although it is widely believed that cryotherapy may succeed when topical salicylic acid has failed, there is no clear evidence to support this notion. Indeed some evidence shows that at best cryotherapy is only equal in efficacy to topical salicylic acid. The most effective version of cryosurgery for warts is **liquid nitrogen**, which provides **cure rates of 50%–60%**. Less effective versions include Verruca-Freeze© (chlorodifluoromethane and propane), Histofreezer© (dimethyl ether and propane), or Wartner© (dimethyl ether and propane), which produce less than half the chill of liquid nitrogen.

Our cryosurgery technique starts by asking you to hold an ice pack to the wart to pretreat the area, then applying liquid nitrogen to the wart and a 2-mm surrounding area for 5 seconds until the tissue is white. We then allow the area to thaw completely and repeat.

The disadvantages of cryosurgery include

- The pain it causes, which usually is too traumatic for patients under 14 years of age
- The requirement of repeat treatments every 3 weeks
- Its tendency to leave the skin lighter or darker in color
- The potential to kill hair follicles, and
- The potential to cause scarring.

4. With your cooperation, a combination of *SALICYLIC ACID THERAPY* and *CRYOSURGERY* can be used:

Once you have prepared the area as specified in section 2 above, it will be easy for Dr. Esche to freeze the base of the wart. To completely remove a wart, liquid nitrogen treatments may be needed every 3 weeks for a total of 5 times.

5. TRETINOIN (Off-label)

How well it works: In one small study (two groups of 25 subjects), **85%** of the children treated with tretinoin 0.05% cream were successfully cleared of warts, compared with only 32% of those treated with a placebo.

Side effects: When applied to the skin, tretinoin (**Retin-A©**) cream can cause

- Dry, irritated skin
- Changes in skin color,
- Sunlight sensitivity (requiring sunscreen use or covering of treated skin),
- Red, swollen, crusted, or blistered skin

Safety in Pregnancy: C. Contraindicated in pregnant and nursing women. The possibility that a woman of childbearing potential is pregnant at the time of institution of therapy should be considered. A negative result for a pregnancy test should be obtained within 2 weeks prior to therapy, which should begin during a normal menstrual period.

6. CANTHARIDIN (Off-label)

A topical preparation made of purified secretions from the blister beetle *Cantharis vesicatoria*, Cantharidin must be applied in the office and causes the skin under the wart to blister, lifting the wart off the skin.

We use the wooden end of a cotton-tipped applicator to apply a small drop to each lesion. We then allow it to dry completely and cover with tape. The treated area should be washed off 5 hours later, or sooner if burning or pain develops.

The blistering occurs within 24–48 hours and takes 4–7 days to heal. Cantharidin is highly toxic if ingested and is not approved for wart treatment, but the Food and Drug Administration in 1998 said it will not take regulatory action if its use is limited to topical use in the professional office setting.

The risks of cantharidin include:

- Pain
- Scarring
- Residual pigmentation or skin lightening
- Chemical lymphangitis or lymphedema

Safety in pregnancy: Use during pregnancy or in nursing mothers is not recommended since there have been no adequate and well controlled studies performed in these groups.

7. IMIQUIMOD = Topically applied immunomodulator (Off-label).

Although not approved for common warts, topical 5% imiquimod cream (**Aldara**®) often is used for difficult to treat common warts and is approved for treatment of genital warts in patients aged 12 years and older.

Aldara® cream is painless, well tolerated by all ages, and may induce immunity to warts. On the downside, it requires 4 months or more of nightly applications and is expensive, although many insurers now cover it for the treatment of warts. To avoid irritation, do not use **Aldara**® cream to treat warts on the face, neck, or occluded areas like the diaper area or genitals.

Side effects: **Aldara**® cream causes skin redness in 30% of cases and, in rare cases, has been associated with flulike symptoms, fever, or photosensitivity.

Safety in Pregnancy: C. Contraindicated in pregnant and nursing women. The possibility that a woman of childbearing potential is pregnant at the time of institution of therapy should be considered. A negative result for a pregnancy test should be obtained within 2 weeks prior to therapy, which should begin during a normal menstrual period.

8. DUCT TAPE

Does not always work as monotherapy but appears to boost the efficacy of other topical therapies when used in combination. Duct tape was shown to have efficacy

Our preferred treatments depend on the patient's age and type of warts:

► COMMON & PLANTAR WARTS

For children under age 14 years,

- **Compound W**® gel (17% salicylic acid) or **Duofilm**® fluid (17% salicylic acid and 15% lactic acid) plus **Mediplast**® is first-line therapy.
- **Aldara**® is our next choice,
- With **Cantharidin** applied in the office plus **Aldara**® applied at home a distant third option.

For older children,

- **Compound W**® gel (17% salicylic acid) or **Duofilm**® fluid (17% salicylic acid and 15% lactic acid) plus **Mediplast**® would be our first choice for therapy,
- **Compound W**® gel (17% salicylic acid) or **Duofilm**® fluid (17% salicylic acid and 15% lactic acid) plus **Mediplast**® plus **liquid nitrogen** would be our next choice,
- But often teenagers are too busy to come back for repeat treatments, in which case we suggest **Retin-A**® **Micro** gel 0.04% under **duct tape** occlusion in the morning and **Aldara**® cream under the tape in the evening.

For adults,

- Our favorite treatment has become **Retin-A**® **Micro** gel 0.04% under **duct tape** occlusion in the morning and **Aldara**® cream under the tape in the evening.

► FLAT WARTS

- **Retin-A**® cream is first-line therapy,
- Light **cryotherapy** is our next choice.
- With **Aldara**® a distant third option.

► PERIUNGUAL WARTS

- **Compound W**® gel (17% salicylic acid) or **Duofilm**® fluid (17% salicylic acid and 15% lactic acid) plus **Mediplast**® would be our first choice for therapy.
- **Compound W**® gel (17% salicylic acid) or **Duofilm**® fluid (17% salicylic acid and 15% lactic acid) plus **Mediplast**® plus **liquid nitrogen** would be our next choice,
- The third option is **cantharidin** applied in the office plus **Aldara**® applied at home.