

# Cutaneous non-cancerous warts

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## Introduction

In the medieval ages, people often associated warts with witches and old wives' tales. Some superstitions had people believing that warts could be contracted by handling toads and cured by rubbing bacon rind on the wart. However, thanks to the enlightenment of scientific research, we know that warts are a result of a viral infection caused by the human papillomavirus (HPV).

HPV is a DNA virus that infects humans and affects the skin or mucosal regions of the body. The virus causes the growth of warts or lesions in these areas, in some cases even progressing to cancer. There are hundreds of types of HPVs. According to a 2008 review of the virus, 96 strains have been fully sequenced and approximately 100 have been partially sequenced.<sup>1</sup>

The different strains of the virus are categorised into two classes according to their pathology: low-risk and high-risk. The high-risk HPV strains are associated with cancers, such as cervical cancer in women. The low-risk viruses are those most commonly linked to non-cancerous lesions, in particular cutaneous (skin) warts, with the various types being described in Table I, and the focus of this article.<sup>1-3</sup>

## Transmission

Warts are the result of contagious viral infection and are one of the most prevalent skin diseases around the world.

Warts mostly affect children and young adults but can be contracted at any stage in a person's lifetime.<sup>6</sup>

HPV is typically transmitted through direct contact when injured (i.e. broken) skin is exposed to warts of an infected individual. HPV can also be transmitted indirectly by contact with contaminated surface areas such as swimming pools and public bathroom floors, or fomites such as clothing, furniture or utensils. Patients can also re-infect themselves when they bite or pick at their warts and infect their mouth and surrounding skin cells; this is known as autoinoculation.<sup>1,2,6</sup>

When HPV infects the squamous epithelial cells of the skin, it causes rapid growth of the infected cells.<sup>2,5</sup> This induces thickening of the keratin, which results in the formation of warts on the skin. Visible growths can emerge two to six months after contracting the virus.<sup>7</sup> Warts vary in appearance, as described in Table I, according to the strain of HPV that a patient has acquired.<sup>2</sup>

## Treatment and management

Warts have been known to spontaneously disappear after a few months or within a couple of years, in healthy individuals.<sup>2,5</sup> However, due to the stigmatisation of warts and the area of infection, patients do not like to leave the lesions untreated and will, therefore, consult their local pharmacist or practitioner for advice.

**Table I.** Types of warts<sup>2,4,5</sup>

Name	Area of infection	Description
Common wart	Any area of broken skin, most commonly seen on the hands.	Skin tone to greyish in colour. Rough and granular. Thickened keratin and slightly raised.
Flat/Plane warts	Arms, thighs and face	Small flat-like in appearance. Skin tone to a pale brown or yellowish colour.
Plantar warts	On the soles of feet	Project, slightly, out of the skin and surrounded by a thickened ring of keratin. Often confused with callouses. Can cause discomfort or pain while walking.
Periungual warts	On the sides and underneath the finger and toe nails	Skin tone colour and can interfere with the growth of the affected nail.
Filiform warts	Mouth, nose, chin and neck	Skin tone, small and protrude from the skin like a flap.

Warts are difficult to treat, as there is no cure and recurrences are typical.<sup>8,9,11</sup> This is regrettably so for immunocompromised patients, such as those infected with HIV, those individuals undergoing cancer treatment, or organ transplant patients. They are susceptible to a chronic recurrence of warts and are also at risk of developing cancerous lesions.<sup>6</sup>

However, there are various treatment options available to aid in suppressing the growth of warts by damaging the infected skin cells and disrupting the life cycle of the virus.<sup>6,9</sup> These treatments include over-the-counter (OTC) and prescription medications. Two of the most widely used therapies are the different OTC topical salicylic acid formulas or cryotherapy, which is liquid nitrogen that is administered in the doctor's rooms.<sup>2</sup>

### Salicylic acid

Topical salicylic acid formulas come in various preparations from ointments to solutions or gels. The concentration of the active ingredient, salicylic acid, ranges from 10% to 70%, with no more than a 17% concentration in OTC preparations.<sup>2,6,8,10,11</sup> Salicylic acid solutions are routinely utilised in the management of most types of cutaneous warts<sup>8</sup> (refer to Table I) and can be considered as the first line of treatment.<sup>2</sup> Once the solution is applied to the wart, the salicylic acid will break down the hyperkeratotic skin. This will cause the top layer of the HPV-infected tissue to be shed from the lesion.<sup>2,8</sup>

To achieve the best possible outcome from the treatment, warts should be filed down (being careful not to injure the surrounding skin to avoid further infection of the area), then soaked in water for approximately five minutes, and dried before the salicylic acid solution is applied. This procedure should be repeated two to three times a day for no more than 12 weeks.<sup>2,6,8</sup>

### Adverse effects of salicylic acid

Salicylic acid may cause a burning irritation, especially if it comes into contact with the surrounding uninfected skin. Preparations with higher concentrations may leave a patient with chemical burns. Other side-effects include peeling or flaking of the top layer of 'dead' tissue. Patients should be advised not to pick or pull off flaking or peeling tissue as this may cause bleeding of underlying tissue, which could result in an infection of the surrounding skin.<sup>6,8</sup>

Topical salicylic acid preparations are contraindicated in the treatment of genital or facial warts. A general practitioner should be consulted for these types of warts to receive the correct treatment.<sup>6,8</sup>

### Alternative treatments of warts

Cryotherapy is another treatment used in the management of warts, but can only be administered by a doctor. Liquid nitrogen is used to 'freeze' off the wart by means of a cotton swab. This is applied for 5–30 seconds and can be a

painful experience, especially for children. Cryotherapy is administered once every two to three weeks until the wart has diminished in size or disappears, with a maximum of six sessions.<sup>2,6</sup>

There are alternative treatments that are available for patients. However, they should be advised to consult with their practitioner or dermatologist before proceeding with any treatment not prescribed by a professional. These include, but are not limited to, a home-based remedy of tea tree oil,<sup>12</sup> laser treatment or surgery.<sup>6</sup>

If any treatment does not work after three months, or warts persist or change in colour, a patient must consult with their practitioner or dermatologist. Their condition can then be reassessed and an alternative treatment plan can be determined.<sup>8</sup> This is vital as some warts could lead to cancer.<sup>6</sup>

### Conclusion

Due to the difficulty in treating warts, it is important to utilise a combination of therapies. This is because the outcomes of treatments vary between patients, depending on the type of wart and its size.<sup>8</sup> The most widely used combination therapy is salicylic acid and liquid nitrogen as this reduces the growth of warts.<sup>6</sup>

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