

## Treating Poison Ivy, Oak, and Sumac

*Still no magic bullet—but a range of options, old and new.*

**G**ary Bullis is a 49-year-old electric utility worker who presents to the ED complaining of a rash and severe itching for the last six days. (This case is a composite based on my experience.) He says the rash began to appear about 24 hours after a day of work cutting tree branches away from power lines. According to Mr. Bullis, poison ivy vines were intermingled with many of the branches. Hoping to remove any “poison ivy sap,” he showered when he returned home from work. His forearms and the backs of his hands are now covered with a red rash and have 1+ to 2+ edema. He has a 2 in. × 3 in. area of erythema on his neck and reports that his genitals are also affected. There are multiple 1-cm fluid-filled vesicles on all of his affected areas. He reports having applied 1% hydrocortisone cream to these areas three times a day since the rash appeared, but without much relief.

Mr. Bullis’s history suggests that he was exposed to urushiol, the resin found in the *Toxicodendron* genus of plants (Figure 1), which includes two species of poison ivy, two species of poison oak, and one species of poison sumac. Urushiol is present in all parts of the plant, including the leaves, roots, berries, and stems.<sup>1-3</sup>

In the United States, most urushiol exposures are to poison ivy, oak, and sumac (see Figure 2<sup>4-8</sup>). Eastern poison ivy (*Toxicodendron radicans*) is a small shrub or climbing vine that grows east of the Rocky Mountains. Western poison ivy (*Toxicodendron rydbergii*) is a nonclimbing shrub that grows in the northern United States and in southern Canada. Poison oak (*Toxicodendron diversilobum*) grows west of the Rocky Mountains and in the southeastern United States (*Toxicodendron toxicarium*). Poison oak grows as a high or low shrub in the West, and as a low shrub in the Southeast. Poison sumac (*Toxicodendron vernix*) grows as a small tree in the eastern United States and southern Canada, and tends to grow in swampy areas. Alaska and Hawaii are the only states where plants of the genus *Toxicodendron* are not normally found.

Sensitivity to urushiol can develop after a first exposure. But it usually takes a second exposure to

produce an allergic skin reaction. Urushiol is one of the strongest and most common plant sensitizers in the United States. After exposure, it takes just minutes for urushiol to penetrate the outer layer of skin and bond with cell membranes. Sixty minutes after exposure urushiol is completely bound to the skin and can no longer be washed off with regular soap and water.<sup>9</sup>

### CONTACT DERMATITIS

Urushiol-induced contact dermatitis usually starts with itching, followed by redness and blistering. If there’s no itching, the dermatitis is probably not caused by urushiol. Mild cases may cause only redness and itching. In moderate cases, blisters and lines of erythema and red papules typically follow. The affected areas may swell and have open, weeping lesions. In more severe cases, extensive, diffuse redness and swelling can occur along with large blisters and severe, disabling itching or pain.

The distribution of lesions varies based on the method and site of contact with urushiol. The arms, legs, and face are most commonly involved. The genitals can become involved from contact with urushiol-contaminated hands. The severity of the dermatitis depends on the person’s level of sensitization, the skin thickness at the site of exposure, and the amount of urushiol that binds with the skin.

Williams and colleagues, in reviewing the findings of early clinical studies, observed that eruptions usually began within 24 to 48 hours after exposure, seldom as early as five to six hours or as late as eight to 15 days. They noted that “the duration of the reaction is its most variable feature, lasting from days to weeks.”<sup>10</sup>

Urushiol can be spread by the hands during the postexposure phase, before it’s been absorbed into the skin. Patients may present with “handprint” or “finger-mark” patterns caused by transfer of urushiol from the palm (see Figure 3). The thick stratum corneum of the palm makes it relatively resistant to dermatitis; areas with a thinner stratum corneum are more likely to develop a reaction.<sup>3,11</sup>

Cutaneous contact with urushiol can lead to autoeczematization (also called an *id* reaction), with



**Figure 1. Three Types of *Toxicodendron*.** Eastern poison ivy (A), Western poison oak (B), and poison sumac (C). Photos courtesy of Zanfel Laboratories.

dozens of red papules and vesicles on the trunk and extremities. This is frequently referred to as a *systemic* reaction because the sensitized white blood cells are thought to travel to other areas of skin, causing an itchy rash in places where there was no skin contact with urushiol.

Urushiol is stable at high temperatures and can be carried in the air by smoke particles when dead plants are burned, potentially causing severe respiratory tract inflammation and severe dermatitis in those who breathe it.

## TREATMENT

**Mr. Bullis, revisited.** During his assessment in the ED, Mr. Bullis is found to be afebrile, with no signs of bacterial infection. Less than 15% of his body surface area is estimated to be affected by the urushiol-induced rash. Because of the localized nature of his areas of outbreak, his contact

dermatitis is not judged to be systemic. What are Mr. Bullis's treatment options?

**Topical medications and washes.** Washing the skin with water in the first 20 minutes after exposure can reduce or prevent a reaction.<sup>12</sup> Once a reaction has begun, the goal of topical therapy is to decrease itching, redness, and heat. The use of over-the-counter topical products containing antihistamines, anesthetics with benzocaine, and neomycin or bacitracin should be avoided because of their potential to cause their own allergic contact dermatitis when absorbed through large breaks in the skin. Topical antihistamines don't work to reduce itching,<sup>12</sup> and except in very mild cases, over-the-counter hydrocortisone is too weak to have any helpful effect.<sup>13</sup>

An over-the-counter wash called Zanfel has been shown in two small studies to significantly reduce redness and blistering for up to six to 10 days after initial exposure.<sup>14, 15</sup> Zanfel is a patented mixture of

ethoxylate and sarcosinate surfactants. *Pharmacy Today* recently noted that “Zanfel claims to bind with urushiol to relieve or prevent *Toxicodendron*-induced allergic reactions,” but pointed out that larger studies are needed to confirm Zanfel’s mechanism and efficacy.<sup>16</sup>

While late application of even the most potent topical corticosteroids does little to help poison ivy dermatitis, their early application—before the presentation of blisters—can significantly reduce itching.

**Wet-to-dry dressings.** Cool compresses may help to reduce itching, redness, and even blisters. Aluminum subacetate (Burow’s solution, or other similar preparations with astringent and antibacterial properties) may be used as a drying agent. Sterile drainage of blisters reduces itching.

**Soaks, lotions, jewelweed.** Patients can also bathe in warm water with colloidal oatmeal or cornstarch for their soothing, antipruritic properties. (Place oatmeal in a tied sock before dropping it in the bathtub to prevent clogging the pipes.<sup>12</sup>) Application of bland shake lotions such as calamine can also dry moist skin lesions and cool the skin. While jewelweed has been used for centuries to treat poison ivy and oak, a 1997 study of its effectiveness found that it had no advantage over placebo.<sup>17</sup>

**Oral medications.** Oral antihistamines can provide transient relief through their sedative effect. Oral and intramuscular steroids are effective in patients with significant skin surface exposure; those who experience marked swelling of the face, hands, or genitals; and those with a history of severe dermatitis.<sup>18</sup> According to Resnick, 1 to 2 mg/kg per day of oral prednisone, reducing gradually over 14 to 21 days, “is a standard regimen.” However, prematurely stopping topical steroid therapy can lead to rebound inflammation if the underlying allergic reaction remains active.

Nurses should be aware that symptomatic treatments that don’t remove the urushiol toxin from the skin could require daily use for at least 14 days. During this time the patient may continue to have pruritus, erythema, and edema of their affected areas.

#### PATIENT EDUCATION

For most people, avoiding contact with poison ivy, oak, and sumac is the best approach to avoiding urushiol-induced contact dermatitis. Everyone should learn to identify the species of these plants in their area to help prevent exposure. When exposure is unavoidable, people should wear long pants, long sleeves, and gloves. An over-the-counter

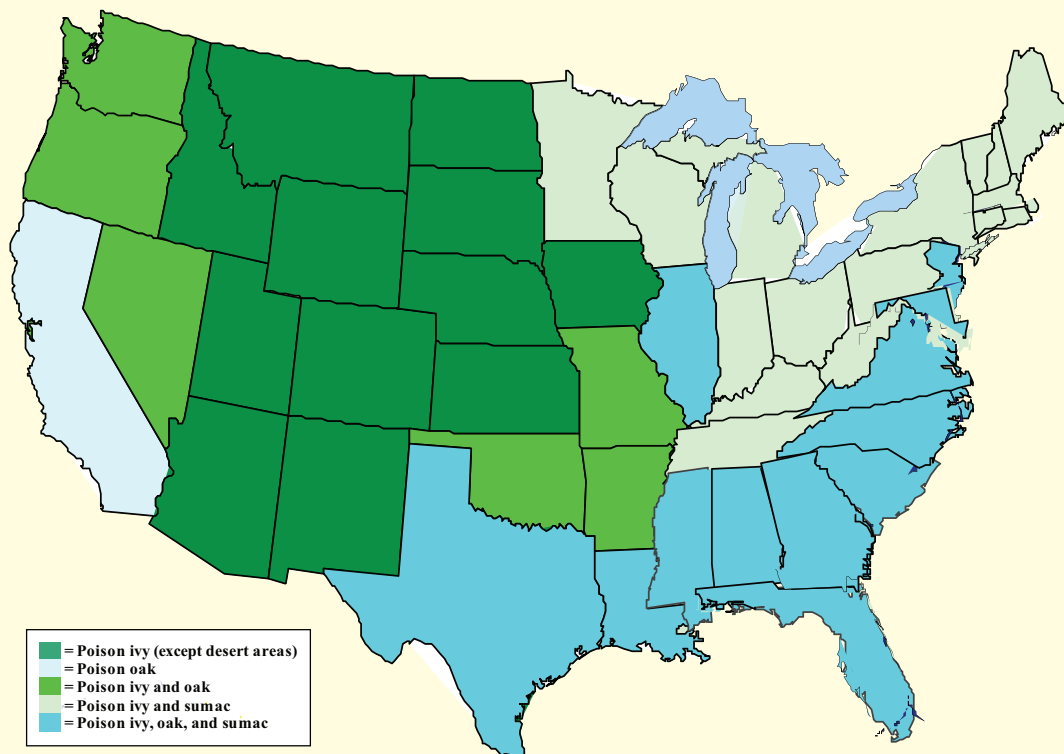
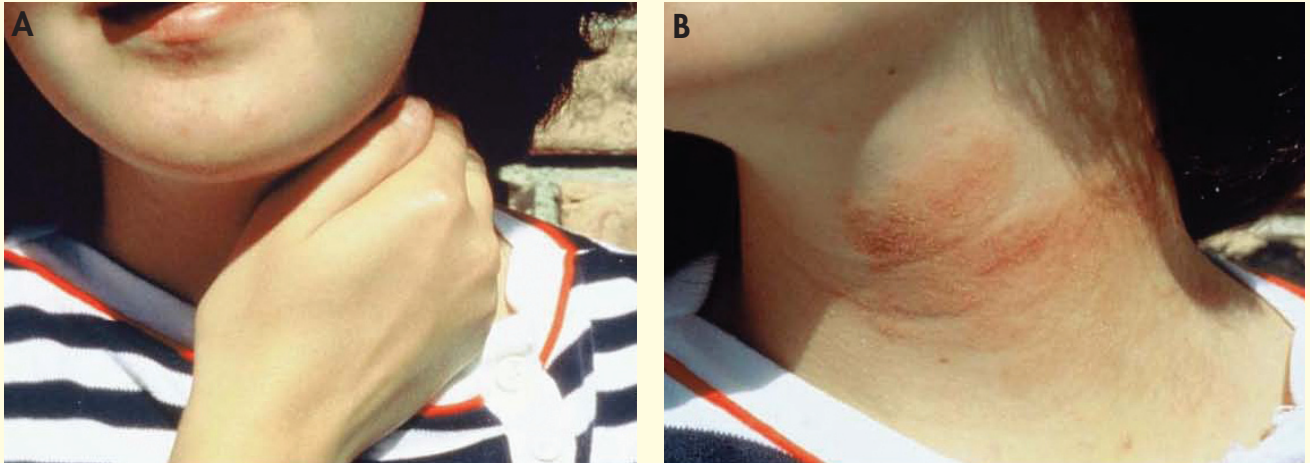


Figure 2. U.S. Prevalence of Poison Ivy, Oak, and Sumac.<sup>4-8</sup> Used with permission from Zanfel Laboratories.



# Emergency



**Figure 3. "Handprint" Rash Pattern.** Transfer of urushiol from the palm (A) causes rash on the neck (B). Photos courtesy of Zanfel Laboratories.

skin barrier cream containing bentoquatam can help prevent urushiol from penetrating the skin.<sup>3, 19, 20</sup> If there's a need to handle plants, vinyl gloves should be used. Unlike cloth and rubber, vinyl is resistant to urushiol.<sup>20</sup>

Share with patients that their rash is not contagious, and that the fluid in their blisters will not spread the rash. Contact dermatitis can result from indirect contact with urushiol from contaminated objects such as clothing, garden tools, sports equipment, and even pet fur. Therefore it's important to remove urushiol by washing fomites and pets with soap and water. Patients should also be instructed to return to their health care providers if they experience signs of a systemic reaction or a bacterial infection. ▼

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