Molluscum contagiosum is very common. In this article we discuss the use of cantharidin as a treatment option for molluscum contagiosum and give detailed information about distribution sources, how to apply it, and caveats regarding its use.

Molluscum contagiosum is a common viral disease of childhood caused by a poxvirus, which presents with small, firm, dome-shaped, umbilicated papules. It is generally benign and self-limited, with spontaneous resolution within 6 months to several years. Watchful waiting can often be an appropriate management strategy; however, some patients either desire or require treatment. Reasons for actively treating molluscum contagiosum may include alleviation of discomfort and itching (particularly in patients where an eczematous eruption — the so-called “molluscum eczema” — is seen in association) or in patients with ongoing atopic dermatitis where more lesions are likely to be present. Other reasons for treatment include limitation of spread to other areas and people, prevention of scarring and superinfection, and elimination of the social stigma of visible lesions. No one treatment is uniformly effective.

Treatment options include destructive therapies (curettage, cryotherapy, cantharidin, and keratolytics, among others), immunomodulators (imiquimod, cimetidine, and Candida antigen), and antivirals (cidofovir). In this article we discuss and describe our first-line treatment approach for those molluscum needing treatment — cantharidin.

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A recent review of evidence supporting various treatment options concluded that cantharidin may be the treatment of choice in young children because it is painless and effective.1

Cantharidin, a phosphodiesterase inhibitor that causes vesiculation of the skin, was originally derived from the blister beetle, but now is synthesized commercially.2 Careful application to the skin typically results in a small vesicle. Because molluscum are very superficial skin lesions, application causes skin vesiculation, with extrusion of the molluscum body, leading to the resolution of the lesion.2 Although the evidence for the efficacy of cantharidin is mainly limited to retrospective case series, many physicians use cantharidin as a treatment, and its use has a high rate of parental (60% to 90%) and physician (92%) satisfaction.1,3-8

In 1997, President Clinton approved an amendment to the Food, Drug and Cosmetic Act of 1962 that provides that certain drug products may be compounded by a physician or pharmacist for individual patients. The Food and Drug Administration (FDA) has included cantharidin in the proposed list of bulk substances that physicians and pharmacists are permitted to compound for use in individual patients.5

**APPLICATION**

Treating molluscum with cantharidin is not technically difficult. Although there is a small risk for adverse effects, such as excessive blistering and scarring, we (and others) believe the safety profile is sufficiently favorable to continue using it for this purpose.1,3-5,7,8 A major advantage over certain treatments, such as cryotherapy and curettage, is that application of cantharidin is painless. Although pain (typically very minor) may occur several hours to a day later, children rarely associate this with their recent doctor visit, and

**SIDEBAR 1.**

**Application Instructions**

(also see Figure 1 and Figure 2)

Treat only a few lesions (no more than four to five) at the first visit. In subsequent visits, treat no more than 12 to 15 lesions.

Try to get the child’s cooperation, explaining that the medication will not hurt. If the child is fearful and moving, assistance will be needed to apply without accidentally getting the medication on normal, unaffected skin.

Use the wooden end of a cotton applicator to apply a small drop of cantharidin directly to each lesion, taking care not to apply to the surrounding skin. If medication accidentally is applied to normal skin (as may happen in a moving infant), immediately wash off the medication.

Allow the cantharidin to dry for at least 5 to 10 minutes to minimize the risk of spread to adjacent unaffected skin.

Attempting to wash off the medication is controversial. Some authors recommend doing so after 2 to 6 hours, but the polymer created by the collodion makes this difficult. Another option is leaving the medication on overnight, only attempting to wash it off if visible blisters are noted a few hours later, although it is doubtful that this will actually halt the blistering effects.

**SIDEBAR 2.**

**Helpful Hints**

Gently shake the bottle, then stir with the applicator before applying to ensure an even concentration of cantharidin.

Do not treat intertriginous areas, or the face, initially. After determining typical response to medication, treatment in these areas can be considered.

For facial lesions, warn parents about the possibility of pigmented alteration.

Do not treat lesions that are directly adjacent to the eye.

For intertriginous areas, warn parents about the greater risk of excessive blistering, especially in hot weather. If the weather is very hot, limit the number of lesions treated to just a few.

Do not treat inflamed molluscum, at least initially, as they may resolve spontaneously.

If there was little or no response after the first treatment, at the next visit, advise the patient to leave the cantharidin on for longer, or not to wash it off at all.

Over-the-counter oral analgesics, such as ibuprofen or acetaminophen, may help with discomfort.

Topical petrolatum may help soothe irritated skin. Before applying petrolatum, make sure that the cantharidin has been thoroughly washed off. Liberal petrolatum application to areas with active cantharidin can cause spread of cantharidin and widespread blisters.10

If surrounding dermatitis is present, treat it with 1% hydrocortisone ointment (over-the-counter).
are usually willing to have the medication applied on subsequent visits.

We disagree with a recent review by Silverberg that suggested that cantharidin should not be applied by pediatricians in their offices.9 Pediatricians and family physicians perform many procedures that are more complicated than cantharidin application, such as splinting, venipuncture, lumbar puncture, intramuscular injection, laceration repair, and incision and drainage. In this article, we give detailed instructions regarding the use of cantharidin, including sources for purchasing, techniques for application, potential pitfalls and adverse effects, and billing codes for in-office treatment with this medication. We believe that with the following information and guidance, cantharidin can become a very useful tool for treating molluscum in the primary physician’s office.

Cantharidin is commercially available in a 0.7% concentration, in a collodion base (see Table, page 127, for sources). This 0.7% formulation is strongly preferred for molluscum treatment over a more potent formulation, which combines a higher concentration of cantharidin (1%) mixed with podophyllin and salicylic acid, and has a much greater risk for causing excessive blistering, scarring, and even chemical cellulitis.

Cantharidin can only be applied in a physician’s office and should never be dispensed to patients for self-application (see Sidebar 1, page 125, and Figure 1, and Figure 2, page 127, for application instructions). Most patients improve after one or two visits.3,4,8 Complications include excessive blistering, pain, pruritis, and burning (see Figure 3, page 128, and Figure 4, page 128). Although some authors estimate that these adverse effects occur in approximately 6% to 46% of patients, in our experience, the rate is at the low end of this range.3,4,8 Temporary erythema can occur in up to 37% of patients.4,5 Care should be taken to avoid spreading the cantharidin to unaffected areas or to the eyes. There may be temporary pigment alteration that should resolve without scarring.

Several “helpful hints” to use the medication effectively and minimize size effects are summarized in Sidebar 2 (see page 125). The first time cantharidin is used, it is prudent to treat only three or four lesions to assess the individual patient’s response. Warn parents that although the medication is applied sparingly, there is a 1% to 5% chance of a larger blister developing. There is controversy regarding whether the medication should be washed off a few hours after application. Some authors recommend this practice, but because cantharidin is dissolved in collodion, it forms a film upon drying, which is probably not easily removed with soap and water.7 Follow-up visits to assess efficacy and perform further

SIDEBAR 3.

Anticipatory Guidance11

Several hours after application, mild discomfort at the site of application occasionally occurs. This can be treated by using cool compresses and by administering over-the-counter analgesics, although, in our experience, this is rarely necessary.

One day after application, a small blister often forms, although, in some cases, only redness or mild crusting is noted. If the blister is tense and uncomfortable, draining with a sterilized needle may help diminish pain, although this is also rarely necessary.

Two to 4 days after application, the blister will crust or drain, leaving a superficial erosion. Apply an antibiotic ointment or sterile petrolatum to the eroded area to encourage re-epithelialization.

Within 1 week, the area is typically healed, although postinflammatory erythema may persist for a week or two. In darker skin types, postinflammatory hyper- or hypopigmentation may persist, at times for several months.

Scarring is rare. Occasionally, even untreated molluscum leave tiny pitted scars.

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treatments are typically scheduled every 2 to 4 weeks. If patients have not had any adverse reactions, more lesions can be treated than at the initial visit. Individual lesions of molluscum typically resolve after one treatment but occasionally require retreatment, particularly if they are large. In many cases, after two to three treatments, the molluscum will diminish in number and gradually resolve. Sidebar 3 (see page 126) outlines recommendations for anticipatory guidance.

OTHER CONSIDERATIONS
Another problem that often arises is the presence of so-called “molluscum eczema,” a dermatitis virtually identical to atopic dermatitis, which preferentially occurs in areas of skin where molluscum are present. Although the individual molluscum can be treated with cantharidin, even in sites of dermatitis, the dermatitis itself should be treated with a low to mid-potency topical steroid to alleviate it and prevent autoinnoculation with further spread of the virus.

### TABLE

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<thead>
<tr>
<th>Company</th>
<th>Product Name</th>
<th>Formulation</th>
<th>Address/phone</th>
<th>E-mail/Website</th>
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<tbody>
<tr>
<td>Dormer Laboratories</td>
<td>Cantharone</td>
<td>0.7% cantharidin in a collodion base</td>
<td>91 Kelfield, Suite 5, Rexdale, Ontario, Canada M9W 5A3; (416) 242 6167; fax: 877 436 7637</td>
<td><a href="http://www.dormer.ca">www.dormer.ca</a></td>
</tr>
<tr>
<td>Pharmscience/Omniderm</td>
<td>Canthacur</td>
<td>0.7% cantharidin in a collodion base</td>
<td>997 Seguin, Hudson, Quebec, Canada J0P 1H0; 450-458-0158; fax: 450-458-7499</td>
<td><a href="mailto:CustomerServicePaladin@pharmascience.com">CustomerServicePaladin@pharmascience.com</a></td>
</tr>
<tr>
<td>Delasco</td>
<td>Cantharidin</td>
<td>Cantharidin crystals and collodion base sold separately for in-office compounding</td>
<td>608 13th Ave., Council Bluffs, IA 51501-6401; (800) 831-6273; fax: (800) 320-9612</td>
<td><a href="mailto:questions@delasco.com">questions@delasco.com</a></td>
</tr>
<tr>
<td>College Pharmacy</td>
<td>Cantharidin</td>
<td>Compounded to order</td>
<td>3505 Austin Bluffs Parkway, Suite 101, Colorado Springs, CO 80918</td>
<td><a href="mailto:info@collegepharmacy.com">info@collegepharmacy.com</a>**</td>
</tr>
</tbody>
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*Cantharidin’s use is limited to in-office treatment by a physician. Please contact the suppliers for ordering requirements.
**Shipping to selected states only.
Although there are few, randomized, prospective trials on treatments for molluscum, a recent large retrospective study on cantharidin by Silverberg et al found that 90% of 300 patients cleared and an additional 8% improved in an average of 2.1 treatments. Parental satisfaction was 95%.^4^6 In their retrospective study of 110 patients, Cathcart et al found a 96% efficacy after approximately two treatments and a parental satisfaction rate of 78%.^8^ In contrast, in their prospective randomized trial of four treatment modalities, Hanna et al found that 36.7% of patients in the cantharidin group were cured after one visit, an additional 43% after two visits, and the remaining 20% after three or more visits. The parental satisfaction rate for cantharidin was 60%. The parental satisfaction for curettage (the preferred treatment modality in Hanna’s study) was almost 90%.^3^ The practice environment in Hanna’s study is significantly different than most U.S. practices because pharmacologic sedation is available as needed for curettage. In our experience, curettage is an effective and acceptable treatment for older children, especially when it is difficult for the family to return for several more visits.

The Current Procedural Terminology (CPT) codes for billing for destruction of molluscum are well-established: CPT: 17110 (destruction of up to 14 lesions) and 17111 (destruction of 15 or more lesions).

**CONCLUSIONS**

With appropriate precautions and information provided, we believe that the use of this medication by pediatricians and other primary care...
providers is safe and well within the technical expertise of any well-trained practitioner.

Finally, although cantharidin is an excellent treatment option for molluscum, we do not recommend its use for common warts. For unknown reasons, the noninflammatory blisters caused by the medication can result in so-called “ring warts” (see Figure 5, page 128), leading to wart spread, rather than improvement.

REFERENCES
11. Cantharone brochure. www.dormer.ca. Dormer Laboratories, Canada.