

Herpes Virus Infection - treatment guide for children and adolescents

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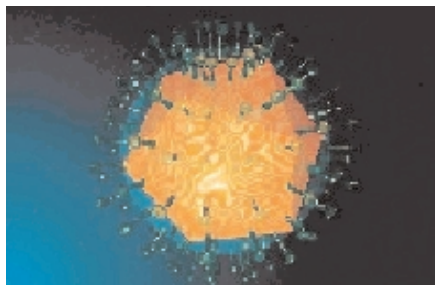
Introduction

There are more than 80 known types of the herpes virus, but only eight are known to cause disease in humans. The most common herpes viruses are Herpes Simplex virus 1 (HSV-1) and Herpes Simplex virus 2 (HSV-2). These look identical under a microscope, and either type can infect the mouth or genitals. Usually HSV-1 affects areas above the waist causing cold sores or fever blisters, and HSV-2 affects areas below the waist causing Genital Herpes (GH). But both viruses can cause outbreaks in either area. Other common herpes infections include chickenpox (varicella-zoster), shingles (herpes zoster), and cytomegalovirus, Epstein-Barr. All herpes virus contain a DNA nucleus and can remain latent in host neural cells, thereby evading the host immune response.

HSV-1, HSV-2 and varicella zoster are viruses that are known to cause oral mucosal disease. Cytomegalovirus is an occasional cause of oral ulceration in immunocompromised patients.

Because herpes viral infection is quite common among dental patients we like to present an up-to-date management of this disease.

This handout should only be used as a guide for managing oral and perioral lesions in children and adolescents. Specific dosages may require modification and/or consultation with a physician. Lesions that do not respond to therapeutic management should be referred for definitive diagnosis to the appropriate specialist.



Herpes Virus

Primary herpetic gingivostomatitis

1. Topical anesthetics and coating agents

a) Rx: Diphenhydramine hydrochloride liquid 12.5 mg/5 ml and Maalox oral suspension; Mix in a 1:1 ratio.

Disp: 200 ml

Sig: Rinse 1-2 teaspoon (5-10 ml) every 4 hours for 2 minutes; swish and spit or swish and swallow. Shake well before use and store suspension at room temperature. It is stable for 60 days.

Pediatric significance: Although both medications are over-the-counter (OTC), usually this mouthrinse is compounded by the pharmacy. For children who cannot rinse, the suspension can be swabbed inside of the mouth with a cotton-tipped applicator or an oral cleaning sponge. If swallowed because of concurrent throat pain, the maximum amount is 4 ml/kg/d or 5 mg/kg/d of diphenhydramine. Because there are several diphenhydramine liquid formulas available, one that is alcohol-free should be requested. Benadryl Dye-Free Allergy Liquid Medication has a bubble gum flavor that appeals to young children. Kaopactate or other magnesium aluminum hydroxide solutions can be substituted for Maalox.

b) Rx: Diphenhydramine hydrochloride liquid 12.5 mg/5 ml, lidocaine viscous, and Maalox oral suspension; Mix in a 1:1:1 ratio for mouthrinse.

Disp: 200 ml

Sig: Rinse 1-2 teaspoons (5-10 ml) every 4 hours for 1 minute and spit out excess. Shake well before use and store suspension at room temperature. It is stable for 60 days. Compounded by pharmacy.

Pediatric significance: do not use lidocaine hydrochloride 2% in children who cannot expectorate because of potential for aspiration. Overuse of viscous lidocaine may be associated with toxicity in children due to the potential for systemic

absorption. Dyclonine 0.5% or 1% may be substituted for viscous lidocaine for greater anesthetic efficacy; however, safety and efficacy has not been established in children under the age of 12. For children, the maximum amount of diphenhydramine is 4 ml/d or 5 mg/kg/d.

c) Rx: Carafate (sucralfate) suspension 1 g/10 ml
Disp: 200 ml

Sig: Rinse with 1-2 teaspoons (5-10 ml) 4 times a day. Rinse for 1 min and spit out the excess. Store at room temperature.

Pediatric significance: in children less than 6 years old, who cannot expectorate, the amount should be limited to 0.5 g four times a day in case the suspension is swallowed. It is sweetened with glycerin and sorbitol and contains no alcohol.

2. Systemic Antiviral Therapy

Rx: Zovirax (Acyclovir) 200 mg/5 ml suspension

Disp: Appropriate ml

Sig: Take appropriate ml every 3 hours while awake or 5 times a day for 7 days

Pediatric significance: Current recommendation is that systemic acyclovir is approved to treat orolabial herpes only in immunocompromised individuals. The dosage for mucocutaneous herpes simplex viral in this age group is 15 mg/kg, five day with a maximum dose of 80 mg/kg/d. It should be used with caution in children with renal function impairment or dehydration. Prolonged therapy may be required for immunocompromised children. This banana-flavored suspension is sweetened with glycerin and sorbitol and contains no alcohol. It is a soothing preparation to swish and swallow but there is no enhancement of the therapeutic effect because of topical antiviral exposure. Systemic antiviral therapy is usually reserved for children with moderate to severe primary orolabial infections because therapy results in shortened duration of symptoms and viral shedding.

Rx: Zovirax or generics (acyclovir) capsules 200 mg

Disp: 35 capsules

Sig: Take 1 capsule every 3 hours while awake or 5 times a day for 7 days.

Pediatric significance: Current recommendation is that systemic acyclovir is approved to

treat orolabial herpes only in immunocompromised individuals. This form of acyclovir is usually recommended for adolescents who can swallow pills. Because of the inconvenient dosing schedule, an alternative schedule includes taking 400 mg 3 times a day for 7 days. Systemic antiviral therapy is usually recommended for children with moderate to severe primary orolabial infections because therapy results in shortened duration of symptoms and viral shedding. Although no specific safety data in children have been published for Valtrex (valacyclovir), limited studies are available in this age group, which appear promising. Improved bioavailability and less frequent dosing are the advantages of this drug. In addition, a liquid formulation can be compounded.

3. Nutritional Liquid Supplement

Rx: PediaSure Complete Liquid Nutrition 8 fl oz (237 ml)

Disp: 8 to 12 cans

Sig: Drink on can (237 ml) four times a day. Serve cold.

Pediatric significance: This liquid supplement is easy to swallow and come in many flavors. Children between the ages of 1 to 6 require 1000 ml of supplement if this is the only source of nutrition, while children between the ages of 7 and 10 require 1300 ml. In addition to this supplement, fluids should be given on a regular basis to prevent dehydration. Frozen popsicles, Jell-O Pudding Pops, and Karo syrup help to soothe the mouth and provide some calories.

4. Topical Antimicrobial Oral Rinse

Rx: Peridex, PerioGard, or generics (chlorhexidine gluconate 0.12%) oral rinse

Disp: 480 ml (16 fl oz)

Sig: Rinse with 15 mL for 30 second and expectorate. Use twice daily, after breakfast and before bed for 7 days for gingivitis.

Pediatric significance: This is useful for the management of a secondary bacterial infection of the gingiva, following herpetic infection. Commercially available chlorhexidine oral rinse contains 11.6% alcohol, which may be too irritating to use with extensive oral ulcers and erosions. It is best to prescribe this oral rinse when most viral-induced lesions have resolved but significant gingival inflammation persists, despite oral hygiene measures. Although commonly

used, the clinical effectiveness and safety have not been established in children younger than age 18. (See section on aphthous ulcers for additional information).

Recurrent (orofacial) Herpex Simplex

1. Prevention

Rx: Coppertone Little Lip Balm, SPF 30, PABA-free (p-aminobenzoic acid), Waterproof (OTC)

Disp: 1 tube

Sig: Apply to lips one hour before sun exposure and every hour thereafter

Pediatric significance: For maximum protection, concurrent use of a sunscreen lotion with SPF 30 on the face and a wide-rimmed hat or visor is most effective when excessive sunlight exposure is a trigger factor. Several lip balms contain a SPF of 30 and the authors do not endorse a particular brand. Many of these lip balms contain several potential skin sensitizers that may result in chapped or cracked lips with chronic use. Examples of other balms with SPF of 30 are ChapStick Sun Zone Ultra Lip Protectant/Sunscreen and Banana Boat Aloe Vera Lip Balm.

Rx: Coppertone WaterBABIES Sunblock, SPF 30, PABA-free, Waterproof (OTC).

Disp: 1 bottle

Sig: Apply to face every 30 minutes before sun exposure and reapply periodically

Pediatric significance: These agents are used to prevent perioral herpetic lesions that are triggered by sun exposure. Lotions work best on the face. Lip balms work well on the ears. Do not use sunscreens on infants < 6 months of age. The authors does not endorse any particular brands but PABA-free products for children include: Banana Boat Baby Block Lotion, SPF 30 and 50, Banana Boat Kids Stick, SPF 30, Coppertone Kids Sunblock Lotion (SPF 30, 40) and Stick (SPF 30).

2. Topical Anesthetic/Analgesic Medication

Rx: Cepacol Viractin cream or gel (OTC)

Disp: 25 oz tube

Sig: Apply to the lip 3-4 times a day, beginning when symptoms first occur. Contains 2% tetracaine. Apply with cotton-tipped applicator to avoid spread to other body sites.

Pediatric significance: Safety and effectiveness in children under the age of 2 have not been established with this topical agent. It has a penetrating formula that contains tetracaine HCl 2%. Other topical agents, Zilactin-B Medicated Gel, Orabase Sooth-N-Seal Gel, Orajel CoverMed Cream, Tanac Medicated gel, Blistex Lip Medex, and Carmex are examples of OTC products that provide a protective barrier, promote drying and decrease itching and tenderness. Bactroban ointment is effective for infected perioral lesions (see impetigo).

3. Topical Antiviral Medications

Rx: Abreva

Disp: 2 g tube

Sig: Apply to the area 5 times a day until lip sore is healed, beginning when symptoms first occur. Rub in gently but completely and wash hands after applying cream.

Pediatric significance: Docosanol exerts a non-specific antiviral action by blocking viral entry into a cell. It is effective against acyclovir-resistant HVS. Safety and effectiveness in children have not been established in children under the age of 12. (SmithKline Beecham Pharmaceuticals or www.abreva.com).

Rx: Denavir (penciclovir) cream 1%

Disp: 2 g tube

Sig: Apply to the area every 2 hours for a period of 4 days, beginning when symptoms first occur. Apply with a cotton-tipped applicator to avoid spread to other body sites.

Pediatric significance: This topical agent should be applied at the earliest sign or symptom. Safety and effectiveness in children have not been established. Bactroban ointment 2% is effective, when secondary bacterial infection is present, to promote healing and reduce the risk of scarring.

4. Systemic Intermittent Antiviral Therapy:

Rx: Zovirax, (acyclovir) 200 mg capsules

Disp: 25 capsules

Sig: Take 1 capsule every 3 hours while awake for 5 days

Pediatric significance: See alternative dosing schedule under primary herpetic gingivostomatitis. This may be indicated in some children and adolescents who develop severe, multifocal orolabial lesions or when is known as a trigger

event. Therapy must be initiated at the earliest sign/symptom of recurrence. Oral acyclovir is indicated for immunocompromised children. There are limited studies evaluating the effectiveness of this drug in children and appropriate dosages in this age group are not available for management of recurrent oral and labial HSV infection.

5. Systemic Prophylaxis Antiviral Treatment

Rx: Zovirax (acyclovir) 40 mg capsules

Disp: 180 capsules

Sig: Take 1 capsule twice a day continually

Pediatric significance: This dosing schedule is a consideration for adolescents who develop 6 or more episodes per year or who develop HSV-associated erythema multiforme. There are limited studies evaluating the effectiveness of this drug in children and appropriate dosages in this age group are not available for management of recurrent oral and labial HSV infection.

6. Nutritional Supplementation

Rx: Lysine 500 mg tablets

Disp: 100 tablets

Sig: Take 2 tablets every morning before breakfast. Continue for 6 months and re-evaluate

Pediatric significance: Works best if patients have high lysine, low arginine (chocolate, nuts) diet. May increase to 2000 mg/day if the patient has a known trigger challenge. T cell immunosuppression may occur if 10 grams of lysine are taken daily. If there is skin involvement, along with the herpes labialis, some patients may benefit from vitamin E supplements, bioflavonoids, and zinc. Controlled studies have not been well documented for oral HSV infections and have shown mixed results. Studies in children are not available.

Rx: DISSA-PEER tablets and chewables (Champion Co, Spring, TX)

Disp: 30 ct tablets and 25 ct chewables

Sig: Take 1 tablet 3 times a day for the treatment of the lesion. For prevention take one tablet daily.

Pediatric significance: DISSA-PEER is a nutritional supplementation that contains L-lysine 325 mg; zinc gluconate 20 mg and thiamin 25 mg. For children between the ages of 2 and 12, take 1/2 tablet 3 times a day with an outbreak and 1/2 tablet once a day for prevention. Works

best if patients have high lysine, low arginine (chocolate, nuts) diet. May increase to 2000 mg/day if the patient has a known trigger challenge. T cell immunosuppression may occur if 10 grams of lysine are taken daily. If there is skin involvement, along with the herpes labialis, some patients may benefit from vitamin E supplements, bioflavonoids, and zinc. Controlled studies have not been well documented for oral HSV infections and have shown mixed results. Studies in children are not available. DISSA-PEER is available through Champion Co, 1-800-594-4395.

Rx: Peridin-C (citrus bioflavonoids and ascorbic acid) tablets 400 mg

Disp: 100 tablets

Sig: Take 1 tablet tid for 3 to 4 days. State as soon as the first symptoms develop.

Pediatric significance: The mechanism of action is to enhance the immune system, increase capillary integrity and promote healing. Limited clinical studies are available.

Herpes zoster (shingles)

1. Systemic Antiviral Treatment

Rx: Zovirax or generic (acyclovir) tablets 800 mg

Disp: 35-50 tablets

Sig: Take 1 tablet every 4 hours (5 tablets per day) while awake for 7-10 days.

Pediatric significance: Herpes zoster is uncommon in healthy children and this dosage is usually indicated for adolescents. Therapy should be started within 48 hrs of the onset of signs and symptoms. It should be used with caution in individuals with renal function impairment or dehydration. This is the least expensive antiviral agent to prescribe, especially the generic form. It does not have a major effect on postherpetic neuralgia but children rarely develop this complication.

Rx: Valtrex (valacyclovir) caplet 1 gram

Disp: 21 caplets

Sig: Take 1 caplet tid for 7 days.

Pediatric significance: Although the safety and efficacy of this drug has not been approved for use in children, adolescents were evaluated in

several clinical trials. A liquid formulation can be compounded using Ora-Sweet and Syrpalta syrups, if stored in amber glass bottles at 4°C, and is stable for at least 21 days. It should be started within 72 hours of symptoms. Because thrombotic thrombocytopenic purpura has been documented in immunocompromised adults, consultation should be obtained prior to recommending this drug for the immunocompromised patient. Most effective for decreasing risk of postherpetic neuralgia.

Rx: Famvir (famciclovir) tablets 500 mg

Disp: 21 tablets

Sig: Take 1 tablet every 8 hours for 7 days.

Pediatric significance: Although the safety and efficacy of this drug has not been approved for use in children, immunocompromised adolescents were included in clinical trials. Therapy is most effective if started within 48 hours after onset of signs/symptoms.

References

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