

# Antibiotic Prophylaxis Discouraged Before Surgery

BY SHARON WORCESTER  
Southeast Bureau

ORLANDO — Most dermatologic surgery patients don't need perioperative antibiotics, and the routine use of antibiotics to prevent surgical site infection or infective endocarditis should be discouraged, Dr. Steve Spencer said at the annual meeting of the Florida Society of Dermatologic Surgeons.

Healthy individuals, those who undergo surgery of a clean site, and those who undergo procedures of limited duration typically do not need prophylactic antibiotics. As for determining which patients do need prophylaxis, a number of variable risk factors should be considered, including HIV-positive status, chronic immunosuppression, age, occupation, and temperature/humidity, all of which could affect infection risk, said Dr. Spencer of Port Charlotte, Fla., noting that these are gray areas that require individualized decision making.

It is clearer, however, that those who are immunocompromised; those undergoing surgery of riskier areas such as the mouth, groin, or axillae, or sites that are already infected; and those who are at high risk of

infective endocarditis (see sidebar) should receive prophylaxis, he said. Dr. Spencer cited guidelines on prevention of infective endocarditis published by the American Heart Association last year (Circulation 2007;116:1736-54).

Although the guidelines mainly address dental issues, the AHA noted that infective endocarditis is more likely to result from frequent exposure to random bacteremias associated with daily activities than from bacteremia caused by dental or medical procedures and that prophylaxis is likely to prevent a very small number of cases of infectious endocarditis, if any.

The guidelines also point out that the risks of antibiotic prophylaxis in terms of adverse events exceed the benefits, if any, from antibiotic prophylaxis and recommend that only those with the highest risk of adverse outcomes from endocarditis should undergo antibiotic prophylaxis.

As for procedures on infected skin, skin structures, or musculoskeletal tissue, the AHA noted that, while these infections are typically polymicrobial, only staphylococci and  $\beta$ -hemolytic streptococci are likely to cause infective endocarditis. Therefore, when antibiotic prophylaxis is needed, the drug selected

should target the most likely organisms to be encountered and be given prior to the procedure.

Broad-spectrum antibiotics—most often first-generation cephalosporins—are commonly used to treat these species.

Semisynthetic penicillinase-resistant penicillins are good for gram-positive cocci, *Klebsiella*, *Escherichia coli*, and *Proteus* organisms. Clindamycin is an alternative option in penicillin-allergic patients. Erythromycin is almost never used because it is associated with very high staphylococcal resistance, Dr. Spencer said.

Clindamycin also is a good option for patients undergoing surgery of the oral mucosal areas, but cephalosporins may have less cross-reactivity in penicillin-allergic patients. Although trimethoprim-sulfamethoxazole coverage is similar to these, with excellent gram-positive coverage, it does not provide *Pseudomonas* coverage, he added.

When antibiotic prophylaxis is determined to be necessary, it should be delivered 30-60 minutes before surgery. Since surgical factors are at least as important for preventing infection, sterile techniques and proper sterilization of instruments, avoidance of excess tension on closures,

## Conditions With Endocarditis Risk

The American Heart Association guidelines state that the following cardiac conditions have the highest risk of adverse outcomes from endocarditis:

- ▶ Prosthetic cardiac valve.
- ▶ Previous infective endocarditis.
- ▶ Congenital heart disease.
- ▶ Unrepaired cyanotic CHD, including palliative shunts and conduits.
- ▶ Completely repaired (with prosthetic material or device) congenital heart defect during first 6 months after the repair.
- ▶ Repaired CHD with residual defect (at or adjacent to the site of the prosthetic patch or device) that inhibits endothelialization.
- ▶ Postcardiac transplant cardiac valvulopathy.

avoidance of excessive suture material, and avoidance of charring also require careful attention, he said. ■

### Salex® (6% Salicylic Acid) Cream Salex® (6% Salicylic Acid) Lotion Rx Only FOR DERMATOLOGIC USE ONLY. NOT FOR OPHTHALMIC, ORAL OR INTRA VAGINAL USE.

#### DESCRIPTION

Salex® Cream contains 6% salicylic acid USP incorporated into a patented Multivesicular Emulsion (MVE) vehicle consisting of ammonium lactate, behenitrimumethosulfate and cetylalcohol, cetyl alcohol, dimethicone 360, disodium EDTA, glycerin, glyceryl stearate SE, methylparaben, mineral oil, PEG-100 stearate, phenylethanol, propylparaben, purified water and tolimine. Salex® Lotion contains 6% w/w salicylic acid USP incorporated into a patented Multivesicular Emulsion (MVE) vehicle consisting of ammonium lactate, behenitrimumethosulfate and cetylalcohol, cetyl alcohol, dimethicone 360, disodium EDTA, glycerin, glyceryl stearate SE, methylparaben, mineral oil, PEG-100 stearate, propylparaben, purified water and tolimine.

Salicylic acid is the 2-hydroxy derivative of benzoic acid having the following structure:



This MVE formulation has been shown to provide gradual and prolonged release of the active ingredient into the skin.

#### CLINICAL PHARMACOLOGY

Salicylic acid has been shown to produce desquamation of the horny layer of skin while not effecting qualitative or quantitative changes in the structure of the viable epidermis. The mechanism of action has been attributed to a dissolution of intercellular cement substance. In a study of the percutaneous absorption of salicylic acid in a 6% salicylic acid gel in four patients with extensive active psoriasis, Taylor and Halprin showed that the peak serum salicylate levels never exceeded 5 mg/100 ml even though more than 80% of the applied salicylic acid was absorbed. Systemic toxic reactions are usually associated with much higher serum levels (30 to 40 mg/100 ml). Peak serum levels occurred within five hours of the topical application under occlusion. The sites were occluded for 10 hours over the entire body surface below the neck. Since salicylates are distributed in the extracellular space, patients with a contracted extracellular space due to dehydration or diuretics have higher salicylate levels than those with a normal extracellular space. (See PRECAUTIONS.)

The major metabolites identified in the urine after topical administration are salicylic acid (52%), salicylate glucuronides (42%) and free salicylic acid (6%). The urinary metabolites after percutaneous absorption differ from those after oral salicylate administration; those derived from percutaneous absorption contain more salicylate glucuronides and less salicylic acid and salicylate. Almost 95% of a single dose of salicylate is excreted within 24 hours of its entrance into the extracellular space. Fifty to eighty percent of salicylate is protein bound to albumin. Salicylates compete with the binding of several drugs and can modify the action of these drugs; by similar competitive mechanisms other drugs can influence the serum levels of salicylate. (See PRECAUTIONS.)

#### INDICATIONS AND USAGE

For Dermatologic Use: Salex® is a topical aid in the removal of excessive keratin in hyperkeratotic skin disorders, including verrucae, and the various ichthyoses (vulgaris, sex-linked and lamellar), keratosis palmaris and plantaris, keratosis pilaris, pityriasis rubra pilaris, and psoriasis (including body, scalp, palms and soles).

For Podiatric Use: Salex® is a topical aid in the removal of excessive keratin on dorsal and plantar hyperkeratotic lesions. Topical preparations of 6% salicylic acid have been reported to be useful adjunctive therapy for verrucae plantares.

#### CONTRAINDICATIONS

Salex® should not be used in any patient known to be sensitive to salicylic acid or any other listed ingredients. Salex® should not be used in children under 2 years of age.

#### WARNINGS

Prolonged and repeated daily use over large areas, especially in children and those patients with significant renal or hepatic impairment, could result in salicylism. Patients should be advised not to apply

occlusive dressings, clothing or other occlusive topical products such as petrolatum-based ointments to prevent excessive systemic exposure to salicylic acid. Excessive application of the product other than is needed to cover the affected area will not result in a more rapid therapeutic benefit. Concomitant use of other drugs which may contribute to elevated serum salicylate levels should be avoided where the potential for toxicity is present. In children under 12 years of age and those patients with renal or hepatic impairment, the area to be treated should be limited and the patient monitored closely for signs of salicylate toxicity: nausea, vomiting, dizziness, loss of hearing, tinnitus, lethargy, hyperpnea, diarrhea, and psychic disturbances. In the event of salicylate acid toxicity, the use of Salex® should be discontinued.

Fluids should be administered to promote urinary excretion. Treatment with sodium bicarbonate (oral or intravenous) should be instituted as appropriate. Patients should be cautioned against the use of oral aspirin and other salicylate containing medications, such as sports injury creams, to avoid additional excessive exposure to salicylic acid. Where needed, aspirin should be replaced by an alternate non-steroidal anti-inflammatory agent that is not salicylate based.

Due to potential risk of developing Reye's syndrome, salicylate products should not be used in children and teenagers with varicella or influenza, unless directed by a physician.

#### PRECAUTIONS

For external use only. Avoid contact with eyes and other mucous membranes.

#### Drug Interactions

The following interactions are from a published review and include reports concerning both oral and topical salicylate administration. The relationship of these interactions to the use of Salex® is not known.

I. Due to the competition of salicylate with other drugs for binding to serum albumin the following drug interactions may occur:

DRUG	DESCRIPTION OF INTERACTION
Sulfonylureas	Hypoglycemia potentiated.
Methotrexate	Decreases tubular reabsorption; clinical toxicity from methotrexate can result.
Oral Anticoagulants	Increased bleeding.

II. Drugs changing salicylate levels by altering renal tubular reabsorption:

DRUG	DESCRIPTION OF INTERACTION
Corticosteroids	Decreases plasma salicylate level; tapering doses of steroids may promote salicylism.

III. Drugs with complicated interactions with salicylates:

DRUG	DESCRIPTION OF INTERACTION
Heparin	Salicylate decreases platelet adhesiveness and interferes with hemostasis in heparin treated patients.
Pyrazinamide	Inhibits pyrazinamide induced hyperuricemia.
Uricosuric Agents	Effect of probenemide, sulfipyrazone and phenylbutazone inhibited.

The following alterations of laboratory tests have been reported during salicylate therapy:

LABORATORY TESTS	EFFECT OF SALICYLATES
Thyroid Function	Decreased PBI; increased T3 uptake.
Urinary Sugar	False negative with glucose oxidase; false positive with Clinistest with high-dose salicylate therapy (2-5g q.d.).
5-Hydroxyindole acetic acid	False negative with fluorometric test.
Acetone, ketone bodies	False positive FeCl <sub>3</sub> in Gerhardt reaction; red color persists with boiling.
17-OH corticosteroids	False reduced values with >4.8g q.d. salicylate.

Vanilmelic acid	False reduced values.
Uric acid	May increase or decrease depending on dose.
Prothrombin	Decreased levels; slightly increased prothrombin time.

**Pregnancy (Category C):** Salicylic acid has been shown to be teratogenic in rats and monkeys. It is difficult to extrapolate from oral doses of acetylsalicylic acid used in these studies to topical administration as the oral dose to monkeys may represent six times the maximal daily human dose of salicylic acid when applied topically over a large body surface. There are no adequate and well-controlled studies in pregnant women. Salex® should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers:** Because of the potential for serious adverse reactions in nursing infants from the mother's use of Salex®, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother. If used by nursing mothers, it should not be used on the chest area to avoid the accidental contamination of the child.

**Carcinogenesis, Mutagenesis, Impairment of Fertility:** No data are available concerning potential carcinogenic or reproductive effects of Salex®. Salicylic acid has been shown to lack mutagenic potential in the Ames *Salmonella* test.

#### ADVERSE REACTIONS

Excessive erythema and scaling conceivably could result from use on open skin lesions.

#### OVERDOSAGE

See Warnings.

#### DOSE AND ADMINISTRATION

The preferable method of use is to apply Salex® thoroughly to the affected area and to cover the treated area at night after washing and before retiring. Preferably, the skin should be hydrated for at least five minutes prior to application. The medication is washed off in the morning and if excessive drying and/or irritation is observed a bland cream or lotion may be applied. Once clearing is apparent, the occasional use of Salex® will usually maintain the remission. In those areas where occlusion is difficult or impossible, application may be made more frequently; hydration by wet packs or baths prior to application apparently enhances the effect. (See WARNINGS.) Unless hands are being treated, hands should be rinsed thoroughly after application. Excessive repeated application of Salex® will not necessarily increase its therapeutic benefit, but could result in increased local intolerance and systemic adverse effects such as salicylism.

#### HOW SUPPLIED

Salex® Cream is available in 454 g (16 oz.) jar with complimentary 12 fl. oz. CeraVe® Cleanser (NDC 13548-010-17).

Salex® Lotion is available in 8 fl. oz. (237 mL) bottle with complimentary 12 fl. oz. CeraVe® Cleanser (NDC 13548-011-09).

Store at controlled room temperature 20° - 25°C (68° - 77°F). Do not freeze.

(1) Data on file.

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## CO<sub>2</sub> Ablation/Curettage Proves Successful in Darier's Patient

BY SHARON WORCESTER  
Southeast Bureau

ORLANDO — CO<sub>2</sub> laser ablation with aggressive curettage proved successful for the treatment of a patient with Darier's disease who had failed other medical therapies.

The CO<sub>2</sub> laser/curettage approach was initially used on one part of the patient's abdomen, and the results compared favorably with results following wire brush dermabrasion on another part of her abdomen, reported

Dr. Tri H. Nguyen at the annual meeting of the Florida Society of Dermatologic Surgeons.

The areas looked similar postoperatively, with erythema appearing on the CO<sub>2</sub> laser-treated area at short-term follow-up, and the beginning of hypertrophic scarring in the dermabraded area (this resolved with flurandrenolide tape). The erythema resolved over time.

The patient was greatly affected by this "horrible" disease, said Dr. Nguyen, associate professor of dermatology, and director of Mohs micrographic and dermatologic surgery at the University of Texas M.D. Anderson Cancer Center, Houston. She had chronic maceration, malodor, repeat infections, and mastitis, and her daily activities were restricted by her symptoms.

After successfully treating a number of cases of Hailey-Hailey disease with the

CO<sub>2</sub> laser/curettage approach, Dr. Nguyen thought it might prove useful in this patient since both diseases require treatment that produces lesion destruction and scarring to achieve long-lasting remission.

She had failed numerous other therapies, including systemic and topical antibiotics, topical retinoids, and laser treatments.

The CO<sub>2</sub> laser/curettage treatment was performed under tumescent anesthesia; the patient also received oral anxiolysis with lorazepam and oral oxycodone and acetaminophen (Percocet). The CO<sub>2</sub> laser

was used on continuous wave mode at up to 40 W. Sometimes 15-20 W were used, but Dr. Nguyen said he never went below that setting on the first pass "because the plaques were so hyperkeratotic."

**The resulting scars have proved to be a 'much better alternative' to the hyperkeratotic Darier's lesions.**

DR. NGUYEN

The skin was treated in a grid pattern to ensure uniformity.

Based on the initial success, the patient was treated subsequently on other areas where she experienced the most difficulties with symptoms, malodor, and infection. The resulting smooth, flat scars which fade from the initial erythema into hypo- or depigmented scars have proved to be a "much better alternative" to the hyperkeratotic Darier's lesions, he said. The patient has been extremely satisfied with the results, and has returned repeatedly for treatment of additional areas.

Dr. Nguyen had no relevant conflicts of interest to disclose. ■

