

# Oral Sucrose Eases Immunization Pain in Infants

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Oral sucrose is known to be an effective analgesic for neonates and infants undergoing painful procedures. Now a new study has shown that sucrose significantly decreases pain and distress when given to infants before immunizations.

The study comprised 83 infants, aged 2 months and 4 months. The infants were

randomized, with careful blinding of the investigators and parents, to either 24% oral sucrose or to sterile water, just before receiving a series of three immunization injections.

The results showed a 60% decrease in the mean pain score after the first injection for the 38 infants given sucrose, compared with the mean score of the 45 infants given sterile water, and a 78% decrease in the mean pain score at 2 minutes after the third injection, reported

Linda A. Hatfield, Ph.D., of Pennsylvania State University, University Park, and her colleagues.

The highest mean pain scores for both groups of infants were seen at the pain assessment at 7 minutes, which was immediately after the third injection, Dr. Hatfield and colleagues reported (*Pediatrics* 2008;121:e327-34). At that point, the sucrose group had a mean pain score 21% lower than controls. And 2 minutes after that last injection, when the difference in

the mean pain scores was 78%, the sucrose-treated group had returned to showing no pain response.

The pain scale used in the study was the University of Wisconsin Children's Hospital Pain Scale, which uses five criteria to score pain responses: cry, facial expression, behavioral, body movement, and sleep.

The 24% sucrose solution was delivered orally from a syringe, after which the infants were given a pacifier to suck. The dose given was 0.6 mL/kg, with the weight based on the average birth weight, and therefore equaled about a 2-mL dose.

The immunizations given were a combined diphtheria, tetanus, acellular pertussis, hepatitis B, and polio vaccine; a *Haemophilus influenzae* type B vaccine; and the heptavalent pneumococcal conjugate vaccine. Each was given 2 minutes apart.

Dr. Hatfield and her colleagues noted that sucrose already has been shown to be an effective analgesic for term and preterm infants having venipuncture and heel lance procedures, and that the American Academy of Pediatrics recommends sucrose for minor painful procedures in neonates.

They also noted that it works very quickly, so that it can be given just 2 minutes before any procedure or injection.

Based on the pain scores from their study, the number needed to treat to have one infant who showed minimal distress—wincing, but easy to console—at 2 minutes after sucrose administration was four. The number needed to treat to have one infant with minimal distress 2 minutes after a third injection was two.

“Thus, pediatric care providers would need only a small number of infants to document the efficacy of oral sucrose in reducing pain associated with immunization,” Dr. Hatfield and her colleagues said.

The authors reported that they had no financial relationships to disclose.

## Merck Freezes Vaqta Orders Because of Production Delay

A production delay has caused Merck & Co. to temporarily stop accepting orders for the pediatric and adult vial formulations of Vaqta, the hepatitis A vaccine. It is estimated that the pediatric formulation of Vaqta will be available in the early third quarter this year while the adult formulation will be available in the fourth quarter.

In the meantime, the Centers for Disease Control and Prevention reported, the pediatric and adult formulations of GlaxoSmithKline's hepatitis A vaccine Havrix, and its adult hepatitis A/hepatitis B combination vaccine (Twinrix) “are currently in good supply to meet demand.”

GlaxoSmithKline plans to increase production of both vaccines to help ensure uninterrupted supply for the United States market.

There has been no change in the routine recommendations for hepatitis A vaccinations, the CDC said.

—Doug Brunk

### DIFFERIN® (adapalene) Cream, 0.1%

#### Rx Only

#### BRIEF SUMMARY

For topical use only. Not for ophthalmic, oral, or intravaginal use.  
**INDICATIONS AND USAGE:** DIFFERIN® Cream is indicated for the topical treatment of acne vulgaris.

**CONTRAINDICATIONS:** DIFFERIN® Cream should not be administered to individuals who are hypersensitive to adapalene or any of the components in the cream vehicle.

**PRECAUTIONS: General:** If a reaction suggesting sensitivity or chemical irritation occurs, use of the medication should be discontinued. Exposure to sunlight, including sunlamps, should be minimized during use of adapalene. Patients who normally experience high levels of sun exposure, and those with inherent sensitivity to sun, should be warned to exercise caution. Use of sunscreen products and protective clothing over treated areas is recommended when exposure cannot be avoided. Weather extremes, such as wind or cold, also may be irritating to patients under treatment with adapalene.

Avoid contact with the eyes, lips, angles of the nose, and mucous membranes. The product should not be applied to cuts, abrasions, eczematous or sunburned skin. As with other retinoids, use of “waxing” as a depilatory method should be avoided on skin treated with adapalene.

**Information for Patients:** Patients using DIFFERIN® Cream should receive the following information and instructions:

1. This medication is to be used only as directed by the physician.
2. It is for external use only.
3. Avoid contact with the eyes, lips, angles of the nose, and mucous membranes.
4. Cleanse area with a mild or soapless cleanser before applying this medication.
5. Moisturizers may be used if necessary; however, products containing alpha hydroxy or glycolic acids should be avoided.
6. Exposure of the eye to this medication may result in reactions such as swelling, conjunctivitis, and eye irritation.
7. This medication should not be applied to cuts, abrasions, eczematous or sunburned skin.
8. Wax epilation should not be performed on treated skin due to the potential for skin erosions.
9. During the early weeks of therapy, an apparent exacerbation of acne may occur. This is due to the action of this medication on previously unseen lesions and should not be considered a reason to discontinue therapy. Overall clinical benefit may be noticed after two weeks of therapy, but at least eight weeks are required to obtain consistent beneficial effects.

**Drug Interactions:** As DIFFERIN® Cream has the potential to produce local irritation in some patients, concomitant use of other potentially irritating topical products (medicated or abrasive soaps and cleansers, soaps and cosmetics that have a strong drying effect, and products with high concentrations of alcohol, astringents, spices or lime rind) should be approached with caution. Particular caution should be exercised in using preparations containing sulfur, resorcinol, or salicylic acid in combination with DIFFERIN® Cream. If these preparations have been used, it is advisable not to start therapy with DIFFERIN® Cream until the effects of such preparations in the skin have subsided.

**Carcinogenesis, Mutagenesis, Impairment of Fertility:** Carcinogenicity studies with adapalene have been conducted in mice at topical doses of 0.4, 1.3, and 4.0 mg/kg/day, and in rats at oral doses of 0.15, 0.5, and 1.5 mg/kg/day. These doses are up to 8 times (mice) and 6 times (rats) in terms of mg/m<sup>2</sup>/day the maximum potential exposure at the recommended topical human dose (MRHD), assumed to be 2.5 grams DIFFERIN® Cream, which is approximately 1.5 mg/m<sup>2</sup> adapalene. In the oral study, increased incidence of benign and malignant pheochromocytomas in the adrenal medullas of male rats was observed.

No photocarcinogenicity studies were conducted. Animal studies have shown an increased risk of skin neoplasms with the use of pharmacologically similar drugs (e.g., retinoids) when exposed to UV irradiation in the laboratory or to sunlight. Although the significance of these studies to human use is not clear, patients should be advised to avoid or minimize exposure to either sunlight or artificial UV irradiation sources.

Adapalene did not exhibit mutagenic or genotoxic effects *in vivo* (mouse micronucleus test) and *in vitro* (Ames test, Chinese hamster ovary cell assay, mouse lymphoma TK assay) studies.

Reproductive function and fertility studies were conducted in rats administered oral doses of adapalene in amounts up to 20 mg/kg/day (up to 80 times the MRHD based on mg/m<sup>2</sup> comparisons). No effects of adapalene were found on the reproductive performance or fertility of the F<sub>2</sub> males or females. There were also no detectable effects on the growth, development and subsequent reproductive function of the F<sub>2</sub> generation.

**Nursing Mothers:** It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when DIFFERIN® Cream is administered to a nursing woman.

**Pediatric Use:** Safety and effectiveness in pediatric patients below the age of 12 have not been established.

**ADVERSE REACTIONS:** In controlled clinical trials, local cutaneous irritation was monitored in 285 acne patients who used DIFFERIN® Cream once daily for 12 weeks. The frequency and severity of erythema, scaling, dryness, pruritus and burning were assessed during these studies. The incidence of local cutaneous irritation with DIFFERIN® Cream from the controlled clinical studies is provided in the following table:

	Incidence of Local Cutaneous Irritation with DIFFERIN® Cream from Controlled Clinical Studies (N=285)			
	None	Mild	Moderate	Severe
Erythema	52% (148)	38% (108)	10% (28)	<1% (1)
Scaling	58% (166)	35% (100)	6% (18)	<1% (1)
Dryness	48% (136)	42% (121)	9% (26)	<1% (2)
Pruritus (persistent)	74% (211)	21% (61)	4% (12)	<1% (1)
Burning/Stinging (persistent)	71% (202)	24% (69)	4% (12)	<1% (2)

Other reported local cutaneous adverse events in patients who used DIFFERIN® Cream once daily included: sunburn (2%), skin discomfort-burning and stinging (1%) and skin irritation (1%). Events occurring in less than 1% of patients treated with DIFFERIN® Cream included: acne flare, dermatitis and contact dermatitis, eyelid edema, conjunctivitis, erythema, pruritus, skin discoloration, rash, and eczema.

**OVERDOSAGE:** DIFFERIN® Cream is intended for cutaneous use only. If the medication is applied excessively, no more rapid or better results will be obtained and marked redness, scaling, or skin discomfort may occur. The acute oral toxicity of DIFFERIN® Cream in mice and rats is greater than 10 mL/kg. Chronic ingestion of the drug may lead to the same side effects as those associated with excessive oral intake of Vitamin A.

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325069-0805  
Revised: August 2005

### DIFFERIN® (adapalene gel) Gel, 0.1%

#### Rx Only

#### BRIEF SUMMARY

**INDICATIONS AND USAGE:** DIFFERIN® Gel is indicated for the topical treatment of acne vulgaris.

**CONTRAINDICATIONS:** DIFFERIN® Gel should not be administered to individuals who are hypersensitive to adapalene or any of the components in the vehicle gel.

**WARNINGS:** Use of DIFFERIN® Gel should be discontinued if hypersensitivity to any of the ingredients is noted. Patients with sunburn should be advised not to use the product until fully recovered.

**PRECAUTIONS: General:** If a reaction suggesting sensitivity or chemical irritation occurs, use of the medication should be discontinued. Exposure to sunlight, including sunlamps, should be minimized during the use of adapalene. Patients who normally experience high levels of sun exposure, and those with inherent sensitivity to sun, should be warned to exercise caution. Use of sunscreen products and protective clothing over treated areas is recommended when exposure cannot be avoided. Weather extremes, such as wind or cold, also may be irritating to patients under treatment with adapalene.

Avoid contact with the eyes, lips, angles of the nose, and mucous membranes. The product should not be applied to cuts, abrasions, eczematous skin, or sunburned skin.

Certain cutaneous signs and symptoms such as erythema, dryness, scaling, burning, or pruritus may be experienced during treatment. These are most likely to occur during the first two to four weeks and will usually lessen with continued use of the medication. Depending upon the severity of adverse events, patients should be instructed to reduce the frequency of application or discontinue use.

**Drug Interactions:** As DIFFERIN® Gel has the potential to produce local irritation in some patients, concomitant use of other potentially irritating topical products (medicated or abrasive soaps and cleansers, soaps and cosmetics that have a strong drying effect, and products with high concentrations of alcohol, astringents, spices, or lime) should be approached with caution. Particular caution should be exercised in using preparations containing sulfur, resorcinol, or salicylic acid in combination with DIFFERIN® Gel. If these preparations have been used, it is advisable not to start therapy with DIFFERIN® Gel until the effects of such preparations in the skin have subsided.

**Carcinogenesis, Mutagenesis, Impairment of Fertility:** Carcinogenicity studies with adapalene have been conducted in mice at topical doses of 0.3, 0.9, and 2.6 mg/kg/day and in rats at oral doses of 0.15, 0.5, and 1.5 mg/kg/day, approximately 4-75 times the maximal daily human topical dose. In the oral study, positive linear trends were observed in the incidence of follicular cell adenomas and carcinomas in the thyroid glands of female rats, and in the incidence of benign and malignant pheochromocytomas in the adrenal medullas of male rats.

No photocarcinogenicity studies were conducted. Animal studies have shown an increased tumorigenic risk with the use of pharmacologically similar drugs (e.g., retinoids) when exposed to UV irradiation in the laboratory or to sunlight. Although the significance of these studies to human use is not clear, patients should be advised to avoid or minimize exposure to either sunlight or artificial UV irradiation sources.

In a series of *in vivo* and *in vitro* studies, adapalene did not exhibit mutagenic or genotoxic activities.

**Pregnancy:** Teratogenic effects. Pregnancy Category C. No teratogenic effects were seen in rats at oral doses of adapalene 0.15 to 5.0 mg/kg/day, up to 120 times the maximal daily human topical dose. Cutaneous route teratology studies conducted in rats and rabbits at doses

of 0.6, 2.0, and 6.0 mg/kg/day, up to 150 times the maximal daily human topical dose exhibited no fetotoxicity and only minimal increases in supernumerary ribs in rats. There are no adequate and well-controlled studies in pregnant women. Adapalene should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

**Nursing Mothers:** It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when DIFFERIN® Gel is administered to a nursing woman.

**Pediatric Use:** Safety and effectiveness in pediatric patients below the age of 12 have not been established.

**ADVERSE REACTIONS:** Some adverse effects such as erythema, scaling, dryness, pruritus, and burning will occur in 10-40% of patients. Pruritus or burning immediately after application also occurs in approximately 20% of patients. The following additional adverse experiences were reported in approximately 1% or less of patients: skin irritation, burning/stinging, erythema, sunburn, and acne flares. These are most commonly seen during the first month of therapy and decrease in frequency and severity thereafter. All adverse effects with use of DIFFERIN® Gel during clinical trials were reversible upon discontinuation of therapy.

**OVERDOSAGE:** DIFFERIN® Gel is intended for cutaneous use only. If the medication is applied excessively, no more rapid or better results will be obtained and marked redness, peeling, or discomfort may occur. The acute oral toxicity of DIFFERIN® Gel in mice and rats is greater than 10 mL/kg. Chronic ingestion of the drug may lead to the same side effects as those associated with excessive oral intake of Vitamin A.

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