

# Treat Tinea Capitis Outside and In for Good Effect

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NEWPORT BEACH, CALIF. — Tinea capitis is the most common dermatophytic infection of childhood, Sheila Fallon Friedlander, M.D., said at the annual meeting of the Pacific Dermatologic Association.

She answered some pediatricians' and family physicians' questions about the condition:

► **Which organisms are most likely to cause tinea capitis?** In the United States, *Trichophyton tonsurans* accounts for most cases, said Dr. Friedlander, a pediatric dermatologist at the University of California, San Diego. *Microsporum canis* is occasionally seen, and usually is transmitted from a household pet.

However, in other countries, other organisms may cause tinea capitis, which is something to keep in mind when examining a child who immigrated from

abroad or who was adopted from a foreign country.

► **What is the treatment of choice?** Treatment should consist of oral griseofulvin plus a topical antifungal agent. Dr. Friedlander recommends starting griseofulvin at a dose of 20 mg/kg, which is higher than the standard dose but produces the best cure rates. A lower dose is "an inappropriate treatment for tinea capitis," she said.

Evidence is accumulating that terbina-

fine (Lamisil), given at 3-6 mg/kg, is as safe and effective as griseofulvin and acts within 2 weeks.

Enhanced efficacy has been seen with higher dosing of terbinafine in the range of 5-8 mg/kg per day.

Some studies have documented good response rates with itraconazole (Sporanox) and fluconazole (Diflucan).

► **How long should treatment last?** In her practice, Dr. Friedlander usually treats for 8 weeks. Many experts recommend treating until 2 weeks after resolution of symptoms, which may require weeks to months of therapy.

► **What do you tell parents about griseofulvin?** Griseofulvin is inexpensive and has a long track record of efficacy. It



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DR. FRIEDLANDER

is a relatively safe drug, but about 30% of patients develop side effects that include headache, gastrointestinal upset, and photosensitivity.

► **Are laboratory tests necessary?** Lab tests are needed only if the patient requires more than 8 weeks of treatment.

► **Do you treat the entire family?** Ask about other family members and treat them if they are symptomatic. *T. tonsurans* is commonly passed among wrestlers. Infection with *M. canis* should lead to questions about the family pet, as cats and dogs frequently harbor these organisms.

Some family members may insist on treatment even when they are asymptomatic. Dr. Friedlander prescribes topical therapy to reassure them.

► **Do you prescribe prednisone for kerions?** Most patients don't need prednisone. Kerions (nodular, exudative, circumscribed tumefactions covered with pustules) usually respond to systemic antifungal therapy. "We recommend adjunctive topical antifungal therapy, but rarely utilize the systemic therapy, Dr. Friedlander said.

If the patient doesn't improve within 2 weeks, Dr. Friedlander said she will add systemic therapy, but in most cases that is not necessary.

## VERBATIM

*'We have kids that you don't want in the same room with a computer because it's so arousing.'*

Ann Freeman, p. 24

AHFS Category: 80.08

## Tetanus and Diphtheria Toxoids Adsorbed For Adult Use DECAVAC™

R only

**Brief Summary**  
See full prescribing information

**INDICATIONS AND USAGE** DECAVAC vaccine is indicated for active immunization of persons 7 years of age or older for prevention of tetanus and diphtheria. For immunization of infants and children younger than 7 years of age against tetanus and diphtheria, refer to the manufacturers' package inserts for Diphtheria and Tetanus Toxoids and Acellular Pertussis Vaccine Adsorbed (DTaP) and for Diphtheria and Tetanus Toxoids Adsorbed (For Pediatric Use) (DT). If passive protection against tetanus is required, Tetanus Immune Globulin (Human) (TIG) may be administered at a separate site with a separate needle and syringe. (See **DOSE AND ADMINISTRATION** section, and **TETANUS PROPHYLAXIS IN WOUND MANAGEMENT** subsection.)

Persons who have had tetanus or diphtheria should still be immunized since these clinical infections do not always confer immunity. As with any vaccine, vaccination with DECAVAC vaccine may not protect 100% of individuals.

**CONTRAINDICATIONS** Hypersensitivity to any component of the vaccine is a contraindication to receipt of DECAVAC vaccine. (See **DESCRIPTION** section.)

It is a contraindication to use DECAVAC vaccine after anaphylaxis or other serious allergic reaction following a previous dose of this vaccine, any other tetanus or diphtheria toxoid containing vaccine, or any component of this vaccine. Because of uncertainty as to which component of the vaccine may be responsible, no further vaccination with diphtheria or tetanus components should be carried out. Alternatively, such individuals may be referred to an allergist for evaluation if further immunizations are to be considered.

**WARNINGS** A booster dose of Td is recommended at 11-12 years of age if at least 5 years have elapsed since the last dose of tetanus and diphtheria-toxoid containing vaccine.<sup>1</sup> Subsequent routine boosters with Td are recommended every 10 years (see **DOSE AND ADMINISTRATION**).<sup>1</sup> More frequent administration of Td is not recommended except under circumstances of wound management or diphtheria prophylaxis (see **DOSE AND ADMINISTRATION**) since it may be associated with increased incidence and severity of adverse reactions.<sup>2</sup> Persons who experienced Arthus-type hypersensitivity reactions or a temperature of >103°F (>39.4°C) following a prior dose of tetanus toxoid usually have high serum tetanus antitoxin levels and should not be given even emergency doses of DECAVAC vaccine more frequently than every 10 years, even if they have a wound that is neither clean nor minor.<sup>2,3</sup>

If Guillain-Barré Syndrome occurred within 6 weeks of receipt of a prior vaccine containing tetanus toxoid, the decision to give subsequent doses of DECAVAC vaccine or any vaccine containing tetanus toxoid should be based on careful consideration of the potential benefits and possible risks.<sup>4</sup>

Because of the risk of hemorrhage, DECAVAC vaccine should not be given to persons with any bleeding disorder, such as hemophilia or thrombocytopenia, or to persons on anticoagulant therapy unless the potential benefit clearly outweighs the risk of administration. If the decision is made to administer DECAVAC vaccine in such persons, it should be given with caution, with steps taken to avoid the risk of bleeding and hematoma formation following injection.<sup>4</sup> The Advisory Committee on Immunization Practices (ACIP) has published guidelines for vaccination of persons with recent or acute illness.<sup>5</sup>

### PRECAUTIONS

**GENERAL** Care is to be taken by the health-care provider for the safe and effective use of DECAVAC vaccine. **EPINEPHRINE INJECTION (1:1000) AND OTHER APPROPRIATE AGENTS AND EQUIPMENT MUST BE IMMEDIATELY AVAILABLE SHOULD AN ACUTE ANAPHYLACTIC REACTION OCCUR DUE TO ANY COMPONENT OF THE VACCINE.**

Prior to an injection of any vaccine, all known precautions should be taken to prevent adverse reactions. This includes a review of the patient's previous immunization history, the presence of any contraindications to immunization, the current health status, and history concerning possible sensitivity to the vaccine or similar vaccine. (See **CONTRAINDICATIONS** section.)

Special care should be taken to ensure that the injection does not enter a blood vessel.

Immunocompromised persons (whether from disease or treatment) may not obtain the expected immune response to DECAVAC vaccine.

Administration of Td vaccines is not contraindicated in immunocompromised persons.<sup>4,5</sup>

A separate, sterile syringe and needle or a sterile disposable unit should be used for each patient to prevent transmission of blood borne infectious agents. Needles should not be recapped and should be disposed of according to biohazard waste guidelines.

**DRUG INTERACTIONS** Immunosuppressive therapies, including irradiation, antimetabolites, alkylating agents, cytotoxic drugs and corticosteroids (used in greater than physiologic doses), may reduce the immune response to vaccines (see **PRECAUTIONS - GENERAL** section). No information is available regarding concomitant administration of DECAVAC vaccine with other US licensed vaccines.

**CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY** No studies have been performed with DECAVAC vaccine to evaluate carcinogenicity, mutagenic potential, or impact on fertility.

**PREGNANCY CATEGORY C** Animal reproduction studies have not been conducted with DECAVAC vaccine. It is also not known whether DECAVAC vaccine can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. DECAVAC vaccine should be given to a pregnant woman only if clearly needed. The ACIP has published recommendations for use of Tetanus and Diphtheria Toxoids Adsorbed, For Adult Use, in pregnant women.<sup>4</sup>

**NURSING MOTHERS** It is not known whether DECAVAC vaccine is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when DECAVAC vaccine is administered to a nursing woman.

**PEDIATRIC USE** DECAVAC vaccine is not indicated for infants and children younger than 7 years of age. For immunization of infants and children younger than 7 years of age against tetanus and diphtheria, refer to the manufacturers' package inserts for Diphtheria and Tetanus Toxoids and Acellular Pertussis Vaccine Adsorbed (DTaP) and for Diphtheria and Tetanus Toxoids Adsorbed (For Pediatric Use) (DT).

**GERIATRIC USE** Clinical studies of DECAVAC vaccine did not include subjects aged 59 years and over to determine whether they respond differently than younger subjects.

**ADVERSE REACTIONS** Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a vaccine cannot be directly compared to rates in the clinical trials of another vaccine and may not reflect the rates observed in practice. The adverse reaction information from clinical trials does, however, provide a basis for identifying the adverse events that appear to be related to vaccine use and for approximating rates.

In a clinical study involving 58 individuals 6 years of age and older, 19% of the individuals noted local reactions consisting of erythema, tenderness and induration at the injection site and 2% systemic reactions consisting of headache, malaise and temperature elevations.<sup>6</sup>

**ADDITIONAL ADVERSE REACTIONS** Additional adverse reactions, included in this section, have been reported in conjunction with receipt of vaccines containing tetanus toxoid and/or diphtheria toxoid. Arthus-type hypersensitivity reactions, characterized by severe local reactions (generally starting 2-8 hours after an injection), may follow receipt of tetanus toxoid. Such reactions may be associated with high levels of circulating antitoxin in persons who have had overly frequent injections of tetanus toxoid. (See **WARNINGS**.)

Persistent nodules at the site of injection have been reported following the use of adsorbed products.<sup>7</sup>

Cases of allergic or anaphylactic reaction (ie, hives, swelling of the mouth, difficulty breathing, hypotension, or shock) have been reported after receiving some preparations containing diphtheria and/or tetanus toxoid.<sup>7</sup> Death following vaccine-caused anaphylaxis has been reported.<sup>7</sup>

Certain neurological conditions have been reported in temporal association with some tetanus toxoid-containing vaccines or tetanus and diphtheria toxoid-containing vaccines. A review by the Institute of Medicine (IOM) concluded that the evidence favors acceptance of a causal relation between tetanus toxoid and both brachial neuritis and Guillain-Barré Syndrome.<sup>8</sup> Other neurological conditions that have been reported include: demyelinating diseases of the central nervous system, peripheral mononeuropathies, cranial mononeuropathies, and EEG disturbances with encephalopathy (with or without permanent intellectual and/or motor function impairment). The IOM has concluded that the evidence is

inadequate to accept or reject a causal relation between these conditions and vaccines containing tetanus and/or diphtheria toxoids.<sup>8</sup> In the differential diagnosis of polyradiculoneuropathies following administration of a vaccine containing tetanus toxoid, tetanus toxoid should be considered as a possible etiology.<sup>8</sup>

**POSTMARKETING REPORTS** Additional adverse events reported between 1998-2003 during post-approval use of Tetanus and Diphtheria Toxoids Adsorbed, For Adult Use, manufactured by Aventis Pasteur Inc. include local reactions at injection site (ie, swelling, redness, warmth, cellulitis), myalgia, arthralgia, muscle stiffness, nausea, vomiting, paraesthesia, dizziness, convulsions and rash. Events were included in this list because of the seriousness or frequency of reporting. Because these events are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequencies or to establish a causal relationship to components of Tetanus and Diphtheria Toxoids Adsorbed, For Adult Use, manufactured by Aventis Pasteur Inc.<sup>4</sup>

**DOSE AND ADMINISTRATION** Parenteral drug products should be inspected visually for extraneous particulate matter and/or discoloration prior to administration, whenever solution and container permit. (See **DESCRIPTION** section.) If these conditions exist, the vaccine should not be administered.

**SHAKE SYRINGE WELL before administering the vaccine.** The vaccine, after shaking, is a turbid liquid, whitish-gray in color. Discard syringe containing vaccine if the vaccine cannot be resuspended.

Before injection, the skin over the site to be injected should be cleansed with a suitable germicide.

Inject 0.5 mL intramuscularly in the area of the vastus lateralis (mid-thigh laterally) or deltoid. The vaccine should not be injected into the gluteal area or areas where there may be a major nerve trunk.

Do not administer this product intravenously or subcutaneously.

The needle length should be sufficient to deliver the vaccine intramuscularly, but not so long as to involve underlying nerves and blood vessels or bone. The health-care professional should determine the appropriate size and length of the needle for individual patients.

**PRIMARY IMMUNIZATION** DECAVAC vaccine is approved for administration in persons 7 years of age and older who have not been immunized previously against tetanus and diphtheria, as a primary immunization series of three 0.5 mL doses. For primary immunization with Td vaccines, the intervals between doses recommended by the Advisory Committee on Immunization Practices (ACIP) are 4 to 8 weeks between the first and second dose, and 6 to 12 months between the second and third dose.<sup>2</sup>

DECAVAC vaccine may be used to complete the primary immunization series for tetanus and diphtheria in children 7 years of age or older who have received one or two doses of whole-cell pertussis DTP, DTaP and/or DT vaccine. However, the safety and efficacy of DECAVAC vaccine in such children have not been evaluated.

Interruption of the recommended schedule with a delay between doses should not interfere with the final immunity achieved with DECAVAC vaccine. There is no need to start the series over again, regardless of the time elapsed between doses.<sup>2</sup>

**ROUTINE BOOSTER IMMUNIZATION** DECAVAC vaccine is approved for booster immunization in persons 7 years of age and older who have completed primary immunization against tetanus and diphtheria.

A booster dose of Td is recommended by the ACIP in persons 11-12 years of age if at least 5 years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine.<sup>1</sup> Subsequent routine boosters with Td are recommended every 10 years.<sup>1,9</sup> If a dose is given sooner than 10 years, as part of wound management or on exposure to diphtheria, the next booster is not needed for 10 years thereafter.<sup>2</sup>

**MORE FREQUENT BOOSTER DOSES ARE NOT RECOMMENDED AND MAY BE ASSOCIATED WITH INCREASED INCIDENCE AND SEVERITY OF ADVERSE REACTIONS.**<sup>4</sup> (See **WARNINGS** section.)

**DIPHtheria PROPHYLAXIS FOR CASE CONTACTS** The ACIP has published recommendations on vaccination for diphtheria prophylaxis in individuals who have had contact with a person with confirmed or suspected diphtheria.<sup>2</sup>

**TETANUS PROPHYLAXIS IN WOUND MANAGEMENT** The need for active immunization with a tetanus toxoid-containing preparation, with or without passive immunization with TIG (Human) depends on both the condition of the wound and the patient's vaccination history (Table 1).

A thorough attempt must be made to determine whether a patient has completed primary immunization. Individuals who have completed primary immunization against tetanus, and who sustain wounds which are minor and uncontaminated, should receive a booster dose of a tetanus toxoid-containing preparation only if they have not received tetanus toxoid within the preceding 10 years. For tetanus prone wounds (eg, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite), a booster is appropriate if the patient has not received a tetanus toxoid-containing preparation within the preceding 5 years. If a booster dose is given sooner than 10 years as part of wound management, the next routine booster should not be given for 10 years thereafter.<sup>2</sup>

Individuals who have not completed primary immunization against tetanus, or whose immunization history is unknown or uncertain, should be immunized with a tetanus toxoid-containing product. Completion of primary immunization thereafter should be ensured. In addition, if these individuals have sustained a tetanus-prone wound, the use of TIG (Human) is recommended. TIG (Human) should be administered at a separate site, with a separate needle and syringe, according to the manufacturer's package insert. If a contraindication to using tetanus toxoid-containing preparations exists in a person who has not completed a primary immunizing course of tetanus toxoid and other than a clean, minor wound is sustained, only passive immunization with TIG (Human) should be given.<sup>2</sup>

Td is the recommended preparation for active tetanus immunization in wound management of patients ≥7 years of age.<sup>2</sup> In such persons, a preparation containing tetanus and diphtheria toxoids is preferred instead of single-antigen tetanus toxoid to enhance diphtheria protection. DECAVAC vaccine is approved for wound management in patients 7 years of age and older.

TABLE 1<sup>2</sup> SUMMARY GUIDE TO TETANUS PROPHYLAXIS IN ROUTINE WOUND MANAGEMENT FOR PERSONS 7 YEARS OF AGE OR OLDER\*

History of Adsorbed Tetanus Toxoid (doses)	Clean, Minor Wounds		All Other Wounds**	
	Td <sup>§</sup>	TIG	Td <sup>§</sup>	TIG
Unknown or < three	Yes	No	Yes	Yes
≥ Three <sup>¶</sup>	No <sup>†</sup>	No	No <sup>†</sup>	No

\* Important details are in the text of the **DOSE AND ADMINISTRATION** section. \*\* Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite. <sup>†</sup> If only three doses of fluid tetanus toxoid have been received, then a fourth dose of toxoid, preferably an adsorbed toxoid should be given. <sup>‡</sup> Yes, if >10 years since last dose. <sup>§</sup> Yes, if >5 years since last dose. (More frequent boosters are not needed and can accentuate side effects.) <sup>¶</sup> DECAVAC vaccine is approved for wound management in persons 7 years of age or older.

### STORAGE

Store between 2° - 8°C (35° - 46°F). DO NOT FREEZE. Do not use vaccine after expiration date.

**REFERENCES:** 1. CDC. Recommended childhood and adolescent immunization schedule-United States, 2003. MMWR 2003; 52(04) Q1-Q4. 2. Recommendations of the Immunization Practices Advisory Committee (ACIP). Diphtheria, Tetanus, and Pertussis: Recommendations for vaccine use and other preventive measures. MMWR 40:1991;No.RR-10. 3. CDC. Update: Vaccine side effects, adverse reactions, contraindications, and precautions recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1996; 45(RR-12): 22-31. 4. CDC. General recommendations on immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Family Physicians (AAFP). MMWR 2002; 51(RR-2): 1-35. 5. CDC. Use of vaccines and immune globulins in persons with altered immunocompetence. MMWR 1993; 42(RR-04): 1-9. 6. Myers MG, et al. Primary immunization with tetanus and diphtheria toxoids. JAMA 248:1982; 2478-2480. 7. Institute of Medicine (US). Stratton KR, et al, eds. Adverse events associated with childhood vaccines: evidence bearing on causality. Washington (DC): National Academy Press. 1994:67-117. 8. Data on file. 030104. 9. Food and Drug Administration. New reporting requirements for vaccine adverse events. FDA Drug Bull 18 (2): 1988; 16-18.

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