

line equivalent. These differences in anhydrous theophylline equivalencies may have important therapeutic implications leading to under- or overdosage, particularly when a patient is switched from one theophylline-containing preparation to another. Therefore, we propose that theophylline be prescribed in a dosage based upon the content of anhydrous theophylline in the formulation.

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Hypersensitivity to tetanus toxoid

To the Editor:

In reference to the article "Hypersensitivity to Tetanus Toxoid," which appeared in the July, 1973, issue of the *JOURNAL*, we would like to offer additional data to keep the subject of tetanus toxoid "allergy" in perspective.

At this United States Air Force base we have administered an average of approximately 250,000 doses of alum-precipitated tetanus-diphtheria toxoid each year for the past ten years. The men are first questioned about any prior reactions. Five-tenths ml. of toxoid is given by "gun" twice during basic training. The recipients are observed at 20 to 30 minutes; then the arm is examined again in 48 or 72 hours. Any man who cannot perform duty is admitted to the hospital.

No diagnosis of allergy to any immunization is accepted nor is any man excused from any immunization without being evaluated by our service. This is an important question for the Air Force since allergy to a required vaccine may be cause for separation from service.

All patients with a history of allergy to "tetanus," "tetanus toxoid," "tetanus boosters," or "tetanus antitoxin" were skin-tested to a fluid extract of tetanus toxoid according to the following schedule:

1. 0.02 ml. I.D. of 1:100,000 (read in 15-20 min.)
If no reaction then
2. 0.02 ml. I.D. of 1:10,000 (read in 15-20 min.)
3. 0.02 ml. I.D. of 1:1,000 (read in 15-20 min.)
4. 0.02 ml. I.D. of 1:100 (read in 15-20 min.)
5. 0.02 ml. I.D. of 1:10 (read in 15-20 min.)
6. 0.1 ml. sub-cut. 1:10 (read in 30 min.)
7. 0.1 ml. sub-cut. full strength (read in 30 min.)
8. 0.4 ml. sub-cut. full strength (read in 30 min.)

This schedule was modified for all patients reporting reactions that began more than two hours after the suspected dose as follows. Following injection of dose No. 6, the testing was deferred for 24 or 48 hours, to detect any "Arthus" or "delayed reaction."

We average two referrals per duty day to rule out "tetanus allergy." In the past ten years we have:

1. Not been able to document a single case of anaphylactic reactivity to tetanus toxoid.
2. Recognized 3 patients who were mercury-sensitive and were reacting to the preservative in the vaccine.
3. All patients who were tested were able to receive at least 0.1 ml. of the full strength alum-precipitated tetanus-diphtheria toxoid.

4. At least 10 per cent of basic trainees have at least a mildly troublesome Arthus reaction; however, review of hospital admissions for the past year indicated only two clearly related to D.T. shot. Both of these involved secondary infections of the skin associated with small lacerations caused by the gun.

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Reply

To the Editor:

We appreciate Drs. Michels and Jacobs' interest in our study. Drs. Michels and Jacobs' documentation of a low incidence of severe allergic or anaphylactic reactions following immunization with tetanus toxoid confirms observations that had been noted previously by others¹⁻³ and were also pointed out in our study.

Our data demonstrated the presence of a qualitative altered immune response to tetanus antigen as manifested by cutaneous hypersensitivity reactions in individuals who had substantial serum tetanus antitoxin concentrations. The presence of the immediate and Arthus type cutaneous reactions was correlated with the magnitude of the serum concentration of tetanus antitoxin. Our data emphasized that the serum tetanus antitoxin concentration decreased with time after tetanus immunization and was coincident with a decrease in the frequency of immediate and Arthus type cutaneous reactions with the longer time intervals since the previous booster. We do not feel that the apparent lower incidence of cutaneous hypersensitivity reactions recognized in the military recruits refutes our data, because Drs. Michels and Jacobs did not concurrently measure serum tetanus antitoxin levels in order to document their subject's prior immune status nor do they provide historical information as to the number or most recent previous tetanus immunizations. In addition, it is difficult to compare their skin test results with ours without knowing whether we were using the identical tetanus antigen.

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Stinging insect allergy—treatment failures

To the Editor:

Proper creditation and responsibility for the editorial entitled "Stinging Insect Allergy—Treatment Failures," which appeared in the November, 1973, issue of the JOURNAL, belongs to the Insect Committee of the Academy. It was the result of the work of several members of the Committee and not that of the Chairman alone.

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