Multiple Antigens for Active Immunization*

In response to numerous requests, a Sub-Group on Multiple Antigens has been appointed under the Subcommittee on Evaluation of Administrative Practices, Dr. Haven Emerson, Chairman. The report is published herewith at the request of the committee.

Among the possible modifications in specific active immunization procedures which may contribute to administrative economy and efficiency, without loss of benefit to the individual to be protected, is the use of multiple or combined antigens. Military experience and a number of controlled field tests have in the past few years pointed the way to changes in civil health practice which may have merit, for application by the private physician and in the routine protection of child and adult groups in the community under the auspices of local or state health departments.

The Committee on Multiple Antigens was appointed to consider the present state of scientific knowledge and practical experience in this matter and to encourage or undertake such field tests as it might think desirable.

The following report, the result of the committee’s deliberations since its organization, is approved by the Subcommittee on Evaluation of Administrative Practices, and by the Committee on Administrative Practice, and is offered as a statement of fact and opinion to serve as a basis of policy for health officers:

1. In the present state of our knowledge, there is no urgent necessity for undertaking, as a wartime measure, an immediate special study of the reactions to the use of combined antigens among children or adults. Added information will become available during routine use of combined antigens. The immunizing effectiveness of such combinations of antigens as are considered desirable for routine use on the basis of practicability, already is supported by a considerable amount of data.

2. The optimal age for initial immunization, the optimal intervals between injections, and the optimal intervals before the renewal of immunization for the different antigens are variable and are important factors in the choice of possible combinations.

3. Combinations which are immunologically feasible should not be selected or recommended unless there exist justifiable reasons for establishing immunity with each antigen represented. Reasons considered justifiable are exposures which are apt to occur in normal civilian life, exposure due to occupation, or exposure due to special social conditions (for example, inmates of an institution).

4. In order to avoid confusion to those immunized, to parents, to clinicians, and to administrative officers, the combinations of antigens made available for use should be uniform insofar as practicable.

5. The influence of combining antigens on the potency of each component must be established prior to their use. Combinations which cause destruction or marked deterioration of an antigen are not considered suitable. The amount of

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each antigen administered when given in combination must not be less than that required when administered singly.

6. Present experience indicates that non-living antigens combined with alum are better immunizing agents than non-living antigens suspended or dissolved in plain diluents. The proper spacing of the individual immunizing injections is of great importance in developing maximum immunity, as is also the route of the injection.

7. Information is at present sufficiently definite and convincing to justify the statement that immunization against scarlet fever as a routine or community-wide practice under official auspices is inadvisable until a more suitable antigen becomes available.

8. On the basis of the above impressions, the use of pertussis vaccine and diphtheria and tetanus toxoids, either singly or in combination, is considered acceptable prophylactic practice for the immunization of children in normal civilian life, except a pertussis-tetanus combination. There are other antigens, as for example smallpox vaccine, which must always be administered singly. Antigens intended to provide protection against special hazards may be administered singly or in combination, dependent upon the need.

9. Our present knowledge of immunization procedures through active immunization warrants the following recommendations:

a. **Diphtheria**—Administration of the prescribed dosage of plain or alum precipitated toxoid without preliminary Schick test, preferably not later than 6–12 months of age; otherwise as soon thereafter within the preschool age as possible. Repeat or booster dose on school entrance, sooner when indicated. Immunization of younger school children without the use of the Schick test is indicated if toxoid has not been given during preschool life. Immunization of older Schick-positive children or adults when indicated. Special consideration of pseudo-reactors advisable after 9 years of age. Reactions to injections in younger children and persons not pseudo-positive are negligible. Pseudo-reactors should receive immunizing dose divided into several small injections.

b. **Pertussis**—Administration of the prescribed dosage of plain or alum precipitated vaccine at 6–12 months of age. Administration in later preschool ages, or over, less significant as a community practice under official auspices. Value of repeat or booster dose on school entrance not adequately established, though such dose at younger ages advisable. Approved strength of vaccine, 10 to 15 billion organisms per 1 ml., either plain or alum precipitated.

c. **Tetanus**—Administration of plain or alum precipitated tetanus toxoid by itself in the preschool group as a routine practice is not recommended. In combination with diphtheria toxoid, its use is approved in this age group. The administration of tetanus toxoid at any age is recommended, provided the environmental (social or occupational) conditions demand immunity. Experience is as yet not adequate to recommend the time of giving the repeat dose. The indications are that a booster dose in one year with a repeat booster dose at time of injury, provided injury is not more than 5 years after booster dose, will provide adequate immunity so that antitoxin need not be used prophylactically. Reactions to injections at all ages negligible with few exceptions.

d. **Smallpox**—Inoculation before 3 months of age or as soon thereafter
as practicable. Repeat on school entrance and at 5 year intervals as far as practicable. Revaccination upon exposure to active case essential under all circumstances.

e. Other Antigens of Recognized Value—Recommended whenever special circumstances demand such immunity.

State and Provincial Health Authorities Endorse Local Health Unit Plan

At the 59th Annual Meeting of the Conference of State and Provincial Health Authorities of North America held on March 22 in Washington, D. C., under the Presidency of J. Lynn Mahaffey, M.D., State Health Officer of New Jersey, the following resolution was unanimously adopted.

WHEREAS, the outstanding deficiency in public health administration throughout the North American continent is the lack of overall coverage by legally constituted local health organizations, and

WHEREAS, expansion in the field of public health demands that every segment of the population must receive the benefit of full-time public health protection, and

WHEREAS, studies have been made by the Committee on Administrative Practice of the American Public Health Association for the purpose of evolving a plan for complete public health services, and said committee has reached agreements with the state health officers as to the desirable pattern for full-time public health units in 39 states, representing over 85 per cent of the population of the United States, therefore be it

RESOLVED, that the Conference of State and Provincial Health Authorities of North America urge the early implementation of such a program throughout the Continent of North America.