

• Recommended Immunization Procedures* •

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Proper use of immunization procedures in the control of communicable disease may be approached through review of the official statement on "The Control of Communicable Diseases in Man," published by the A.P.H.A., 7th Edition, 1950. An interesting division of recommendations regarding immunizations is presented in table 1. For 61 diseases there is a statement that no immunization procedure is indicated. For 13 diseases immunization is recommended with certain limitations or restrictions, and for only 4 diseases, smallpox, diphtheria, whooping cough, and tetanus, is routine immunization recommended.

It is to be noted that even where immunization is recommended routinely, it is aimed primarily at the younger age groups in the population. The age distinction is significant and may be interpreted as directing the procedure at a portion of the lifetime of the entire population rather than a particular group of the population per se. As will be pointed out subsequently, there is strong argument for not treating immunization as a specialized effort, but rather for integrating it with a general plan for child health supervision.

Every physician has at least two objectives in regard to any immunization. First he wishes to raise the individual's immunity to the highest level possible. Secondly he realizes that the protection afforded any one person is a composite of his own status and the status of those to whom he may be exposed. Interest in raising the general level of immunity in the entire community thus becomes a matter of enlightened self-interest as well as a realization of social responsibility. The community is fundamentally a collection of individuals. This concept becomes of particular importance in planning all-inclusive programs. Furthermore, proper planning is closely related to accurate morbidity

Table 1

RECOMMENDATIONS* REGARDING ACTIVE IMMUNIZATION

I. No immunization recommended: 61 diseases	
II. Immunization under special circumstances:	
Cholera	Rabies
Influenza	Rocky Mountain spotted fever
Leptospirosis	Tuberculosis
Mumps	Typhus
Paratyphoid Fever	Typhoid Fever
Plague	Yellow Fever
Pneumonia	
III. Routine immunization:	
Diphtheria	Tetanus
Pertussis	Smallpox

*Control of Communicable Disease in Man - 7th Ed.,
1950 American Public Health Association.

reporting, which can directly help to indicate the desirable focus in a particular community at a particular time.

Of the standard procedures, smallpox vaccination, the oldest and perhaps most widely practiced technique, receives first attention. Little that is new has been added. Fresh vaccine, applied by multiple pressure to the upper arm, early in the first year of life, with revaccination desirable at school entrance, are still most important considerations. Perhaps too little emphasis has been placed on the need for taking family history, and on the realization that the only real contraindication to smallpox vaccination is the presence of an active skin eruption in the patient or an unvaccinated sibling. We see far too many cases of eczema vaccinatum in younger siblings of children vaccinated in a grand round-up at school entrance.

Diphtheria immunization is a tested procedure which has played an important role in the decline

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in incidence and mortality of diphtheria. There is general agreement that two doses of alum toxoid, totalling at least 80 lf., separated by 4-6 weeks, are essential. Infants under 6 months of age appear to produce protective levels less readily than older infants, a condition probably related to transient passive immunity, acquired via the placenta. On the other hand, when diphtheria toxoid is mixed with pertussis vaccine the antigenic potency of both appears to be enhanced so that the great majority of even very young infants develop adequate protective levels. The difference between early and late immunization thus is quantitative and the general effectiveness of early immunization permits ready integration with a planned program of child health supervision. To insure proper and prolonged protection adequate booster injections are necessary, one a year or less after the primary series and another at school entrance. How many other boosters are needed will depend to some extent on the prevalence of diphtheria in the community, another indication of the need for accurate and complete morbidity reporting.

The danger of pertussis is greatest in the first few months of life and it has been demonstrated repeatedly that immunization in this period is safe and practical. Although the majority of infants develop adequate immunity at this early age, a substantial portion do not and even those who do are not likely to have adequate protective levels until 2 months after immunization is begun. Thus it becomes important to immunize and maintain immunity in the other children in the family who may bring pertussis to the infant. To achieve this end, as in diphtheria prophylaxis, the plan must be integrated with the general program of child health supervision, in order to reach the maximum number.

An important consideration favoring early immunization is the ease of reaching the largest portion of the infant population. Experience in child health conferences indicates that the attendance decreases as age advances. It is probably a safe assumption that the same thing is true in the physician's office, as the need for feeding advice and general supervision becomes less apparent to the mother.

The most effective vaccine appears to be an alum precipitated or adsorbed concentrate of killed phase I *Hemophilus pertussis*. Difference of opinion exists as to size of dose and number of injections. Three injections containing at least 10,000 million bacteria per injection, 4-6 weeks

apart, are generally used, although successful results have been reported with only 2 injections of this size. Others insist that superior results are obtained only when the total dose reaches 80,000 million. Again booster doses are important, a year after the primary series and at school entrance.

The value of tetanus toxoid seems to be so unequivocal and the ability of even newborn infants to produce adequate protective levels so consistent that routine inclusion of tetanus toxoid is now generally practiced. A device for informing hospital and accident room attendants of prior active immunization in tetanus still needs to be developed. Too often tetanus antitoxin is given needlessly.

Of the procedures employed under special circumstances, passive prophylaxis of measles in intimate household contacts between 6 months and 3 years requires emphasis. Here a direct connection with complete morbidity reporting is apparent. Early knowledge of the case allows provision for insuring that younger siblings receive gamma globulin. On the other hand, it appears logical that major effort to accomplish this end needs to be directed at education of physicians to initiate action when the diagnosis is made. Plans depending on reporting serve primarily as secondary adjuncts.

Typhoid immunization is a measure to be reserved for special indications. The disease has by no means been wiped out, but measures other than immunization are more important in control. Children are less likely to be exposed than adults and routine immunization of children is thus not widely practiced.

Immunization against influenza has been complicated by rapid discovery of new strains. There seems little justification for routine administration of even so-called polyvalent material to infants, children, or even adults unless there is evidence that a particular epidemic is related to a strain contained in the vaccine.

The point was made earlier that effective continued immunity, protecting children against pertussis and its serious complications in the first months of life, or against diphtheria with its serious complications in the preschool years, demands effective integration with an organized plan of child health supervision. A typical plan now in use on the Louisiana State University Service at Charity Hospital in New Orleans is presented in table 2. It is designed to accomplish essential procedures with a minimum of visits during the

Table 2
CONDENSED MINIMUM SCHEDULE
OF WELL BABY VISITS AND IMMUNIZATIONS

Newborn Period	- Discussion with mother on parent-child relations, schedule and feedings.
1 month	- Examination and conference with mother.
2 months	- Conference. First injection diphtheria - tetanus - pertussis combined.
3 months	- Conference. Second injection D - T - P.
4 months	- Conference. Third injection D - T - P.
5 months	- Conference. Vaccination against smallpox.
6 months	- Conference and examination. Record result of smallpox vaccination and revaccinate if necessary.
7½ months	- Conference.
9 months	- Conference.
12 months	- Conference and examination. Booster dose D - T - P.

period when parents are most likely to seek care for their well babies for general reasons of feeding and growth and development, and to maintain and improve this immunity through feasible booster doses. Furthermore, immunization is placed in proper perspective in relation to other components of child health supervision.

Visits for conference and examination should be made every 6 months thereafter, although more frequent discussion of habit development in the second year is desirable. A second booster dose for diphtheria, pertussis, and tetanus may be given at about 3 years of age. A booster for diphtheria and tetanus should be given at school entrance.

If the intervals between injections exceed the one specified, continue the immunization schedule unchanged.

Well planned immunization procedures are an important component in the control of childhood disease, toward which morbidity reporting is primarily directed. They may be applied effectively in a limited number of diseases. Attention to proper age for initiation and booster doses with regard both to individual immunity status and ease of reaching the largest proportion of the population, are essential to success.

Have you read --- ?

DEFENSE

United States civil defense: health services and special weapons defense. U. S. Government Printing Office, Washington, D. C. (December 1950). This volume elaborates on the responsibilities for civil defense health services and special weapons defense which were initially set forth in recommendations for the national civil defense program, published in September 1950, by the National Security Resources Board.

BIOLOGIC WARFARE

Haas, Victor H.: Medical aspects of civil defense in biologic warfare. J.A.M.A. 145(12): 900-905 (1951). This paper constitutes a timely discussion of the problems which the use of biologic warfare by an enemy nation would create.

In the second section, the author points out some defensive measures which could be taken to combat this type of warfare. This paper is one of a series requested by the Council on National Emergency Medical Service of the American Medical Association to inform the medical profession on problems pertaining to civil defense.

AIRPLANE LARVICIDING

Magy, Harvey I., Dahl, Arve H., and Gieb, Arthur F.: Spray plane applications of larvicides for control of *Aedes* in flooded pastures in California. Mosquito News. 10(4): 205-209 (1950). This article reports the results of spraying by airplane for the control of *Aedes dorsalis* and *Aedes nigromaculis* larvae in intermittently flooded pastures.