

State and Territorial immunization policies contain both useful variations and needless and confusing differences. Agreement on standards is advocated.

Variations in State Immunization Policies

By JOHAN W. ELIOT, M.D.

THE planning of a revision of immunization policies by the Arkansas State Board of Health in 1954 prompted a comparison of Arkansas' policies with those of the other States. Each State and Territory was therefore requested to furnish its current immunization policies to the Arkansas State Board of Health. Very helpful replies were received from all States.

Some of the States submitted their current policy statements with the understanding that revision was in process or planned. The District of Columbia and Washington preferred to wait until their revisions were completed before submitting material. Information on the two is therefore not tabulated.

Nine States, two Territories, and the District of Columbia are currently revising or planning revision of their immunization policies, and 15 States and 1 Territory have revised their policies within the past 2 years (table 1). Older policies are not necessarily out of date, as, for example, Oregon's thoughtful and thorough manual of 1950.

An increasing number of States are making

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use of the Report of the Committee on Immunization and Therapeutic Procedures for Acute Infectious Diseases of the American Academy of Pediatrics (1). Eighteen States and three Territories used this report either in whole or in part, or are making it a basis for forthcoming revisions (fig. 1).

Compulsory Immunization Policies and Laws

The degree to which immunization policies constitute general recommendations to physicians or local health units, or specific regulations, vary and is not easy to determine in many cases. On one extreme Indiana, Maine, Ohio, Virginia, and Wyoming simply endorse the American Academy of Pediatrics report (1) for general use. On the other extreme Arkansas, Kentucky, Louisiana, Mississippi, Montana, North Carolina, North Dakota, Oklahoma, South Dakota, Tennessee, Texas, and West Virginia, in which a large number of immunizations are handled by public health personnel, have more definite policies. Alaska has made a major effort to set definite immunization policies because itinerant public health nurses must, at times, carry on their work far from any medical supervision. Puerto Rico has made a similar effort.

Hawaii seems to have the most specific and extensive compulsory immunization laws of any State or Territory. Hawaii legally requires

universal inoculation against diphtheria, typhoid fever, and smallpox.

Six other States and one Territory were noted to have certain immunizations which are or could be required, or which have to be made available, by law. Arkansas requires smallpox vaccination by law before school entry. In Maine, each city, town, or plantation must provide free smallpox vaccination to all, and free diphtheria and pertussis immunizations to all children under age 12 annually. In New Jersey local boards of education are empowered to require diphtheria and smallpox immunizations before school entry if they deem these necessary. New Mexico requires smallpox vaccination for school children. North Carolina law requires that diphtheria and pertussis immunizations be given to all infants before they are a year old, although there is no indication of how this is to be carried out. West Virginia law requires all children to be immunized against smallpox and diphtheria, before or at the time of school entry, by private physician, county health department, or physicians specially appointed by county courts or municipal councils. Puerto Rico makes smallpox vaccination compulsory for all citizens.

Preschool DTP Immunization

The minimum age at which combined diphtheria-tetanus-pertussis antigens (DTP) may be started is 1 month in 4 States and 6 weeks in Mississippi (table 1 and fig. 2). The minimum age is 2 months in 19 States and Alaska. Five of the latter States simply endorse the 1952 American Academy of Pediatrics report, which says, "There is no objection to beginning immunization in the second month of life." Several States recommend that a total of four DTP injections be given if they are started at age 2 months. The minimum age for starting DTP injections is 3 months in 14 States and 2 Territories, and 4 months in 2 States and 1 Territory. Rhode Island recommends starting the vaccinations at 6 months. Four States do not specify a minimum age. North Carolina and Oklahoma do not supply the combined vaccine, but recommend starting pertussis vaccine at age 2 months and diphtheria toxoid at 6 months.

The maximum permissible interval between

injections in the primary DTP series varies a good deal (fig. 3). In 22 States and 1 Territory the interval is stated as 1 month, with no flexibility either way. Mississippi permits 5 weeks to elapse and 5 States allow 6 weeks. Two States and two Territories permit up to 3 months between injections, and three States permit a 4-month period. Up to 6 months is allowed between injections without asking that the series be started over in 8 States and 1 Territory, including those States which simply endorse the American Academy of Pediatrics report. A few States make no recommendation regarding this interval. Two States have continued with separate antigens. Oklahoma recommends a 1-month interval for each antigen, and North Carolina makes no recommendation as to interval.

The recommended age for giving the first DTP booster dose is fairly uniform in 35 States, Alaska, and the Virgin Islands. The age is stated as about 15 to 24 months or simply about 1 year after completion of the primary series (table 1). A few States recommend a shorter interval, varying between 4 and 10 months, before the first booster dose. Other States recommend that the first booster dose be given between ages 2 to 6. Rhode Island gives no routine DTP booster, but gives the series over if the child is Schick positive in the first grade. Most States advocate a DTP booster injection shortly before or at the time of entering school, although five preferred to omit the pertussis antigen after ages 2 to 4. Twenty-one States and four Territories feel it desirable to intersperse another booster dose between the first booster dose and the one at the start of school. Alabama feels that annual booster doses are necessary up to age 5 to maintain immunity to diphtheria.

DTP Immunization of School Children

There seems to be a fairly definite division between those States which do not continue pertussis immunization into the school years and those which do. Twenty-five States and one Territory make no recommendation of pertussis immunization in the school years. Twenty States and three Territories continue pertussis immunization in the school years. Of

the latter, 15 States and 3 Territories discontinue pertussis immunization after age 10, and 3 continue pertussis immunization in the form of DTP to ages 12 to 14. Two States recommend pertussis immunization to age 8. Colorado and Pennsylvania recommend it on exposure at any age.

Fifteen States and one Territory which do not recommend DTP vaccination in the school years advocate at least one dose of combined diphtheria-tetanus toxoids in this period. Six States permit diphtheria-tetanus toxoids as an alternate to DTP in the school period. Twenty-seven States and three Territories do not mention the use of diphtheria-tetanus toxoids in the school period. Seven States advocate separate diphtheria toxoid during the grammar school years.

Many States warn against the routine use of diphtheria toxoid for children over age 10 because of the increased possibility of bad reactions. However, 14 States have been recommending use of either usual or reduced doses of diphtheria toxoid, separately or as diphtheria-tetanus, through ages 12 to 15 (table 1). Michigan and South Dakota recommend the diphtheria toxoid at this age only for those who are Schick negative. Iowa recommends it only for those who are shown not to be sensitive to the toxoid. Those States which simply follow the American Academy of Pediatrics report presumably support its recommendation of a Schick test done at ages 12 to 14, and another 4 years later, to test immunity and to act as a small stimulating dose to arouse immunity. Vermont advocates repeated Schick tests at monthly intervals until the test becomes negative, if there is a special desire for immunizing a child over age 10 against diphtheria (usually 4 to 6 Schick tests). Rhode Island gives Schick tests to all school children in the first and fifth grades and gives Schick-positive children in the first grade a DTP immunization series or a diphtheria series in fifth grade.

Adult Diphtheria Immunization

It is evident that a number of States feel that diphtheria immunization can and should be extended to high school students. Twenty-seven States and three Territories also extend

immunization to adults under various special circumstances with preliminary Schick and, sometimes, toxoid sensitivity tests (table 2 and fig. 4).

So long as there were substantial numbers of diphtheria cases and carriers among children, most adults received occasional casual exposure to the disease which served to boost their immunity to it. This concept was expressed in the immunization literature of the Territory of Hawaii. However, numerous studies (2-4) have shown that with the decrease of diphtheria in children, adult populations are increasingly susceptible to the disease, and when the disease has assumed epidemic proportions, a marked shift of incidence into the adult population has been shown.

Seven States have expressed concern over this trend. Massachusetts has engaged in studies, paralleling and coordinated with those of the U. S. Armed Forces, to determine a dosage and type of diphtheria toxoid which can be given safely and effectively to adults without the administrative difficulties associated with the use of Schick and toxoid sensitivity tests.

As a result of these studies, the Massachusetts Department of Public Health, division of biologic laboratories, is now producing a combined fluid diphtheria-tetanus toxoid which contains about one-tenth the amount of diphtheria toxoid contained in the standard diphtheria-tetanus mixtures. This product is being used both for primary immunization and for booster immunization against diphtheria and tetanus in adults. It is similar to, but has even less diphtheria toxoid than, the diphtheria-tetanus toxoids used successfully by the Canadian armed forces for the past several years. The U. S. Armed Forces have developed a precipitated product with similar properties (5). None of these products requires prior Schick or toxoid sensitivity testing. Arkansas plans to utilize the type of material developed by the U. S. Armed Forces for diphtheria immunization in adults.

Tetanus Immunization Intervals

The importance placed on continued tetanus immunization in older children and adults varies a good deal. Nineteen States and two

Table 1. Summary of DTP immunization policies, United States and Territories

State or Territory	Date of last policy revision	Preschool children			School children		Diphtheria for adults when needed
		Minimum age (in months)	Maximum dose intervals (months)	Age for boosters (years)	Pertussis not included after age	DT recommended in school at age	
Alabama	May 1951	3	1½	1½, 2½, 3½, 4½	6		(1)
Arizona	1954-55 ²	2		To 2d grade	6	10	
Arkansas	June 1955 ³	1	6	1½, 5½	6-10	10, 15	(4)
California	1950-1952	3	1	1½, 5	6	10, 15	(1)
Colorado	July 1949	3	1	1½, 5½	8		(1)
Connecticut	Oct. 1954	3	6	1½, 3½, 6, 9	10	10	
Delaware	1952 ³	4	1	1½, 6, 9	10		
District of Columbia	In revision ⁵						
Florida	April 1952	2	1	1-1½, 4-5, 8	6		
Georgia	In revision	3	1	1½, 4-5, 7-8	6		
Idaho	1952 ³	3	1	1½-2, 6	6	10, 15	
Illinois	Oct. 1954	2	1	1½, 4, 7, 10	10	10, 14	(6)
Indiana	(1952) ³	2	6	1½, 3, 6	10		(6)
Iowa	Oct. 1952 ³	2	4	1½, 5	6	10	(7)
Kansas	No date	3	1	1-2, 5-6	6	⁸ 7-10	
Kentucky	In revision ³	2	4	1-1½, 3, 6	6	9, 12	(1)
Louisiana	Nov. 1954 ³	2	3	1, 2, 6	10		(6)
Maine	(1952) ³	2	6	1½, 3, 6	10		(6)
Maryland	In revision ³	4	4	1, 3, 5	10		(6)
Massachusetts	1952, 1954 ⁹	2	1½	1½	About 4	6, 11, 15	(4)
Michigan	1952	3	1½	2-3	3	5, 10	
Minnesota	Feb. 1952	3	1	1½-2, 5-6	6	9, 12, 15	(6)
Mississippi	Aug. 1954	1½	1¼	1½-2¼	4	6, 10	
Missouri	No date	2	1	1½, 3-4, 6	6	9-10	
Montana	April 1954	1	1	1¼, 4, 7, 10	10		
Nebraska	1948	3	1	1½, 6	6	12	
Nevada	No date ¹⁰		1	About 2, 6	6		
New Hampshire	1952 ³		1½				(7)
New Jersey	1954			2, 5, 8, 11, 14	12-14		
New Mexico	Aug. 1954 ³	1	6	1, 4, 6, 8	10		
New York	In revision ³	3	1	1½, 5	6	10, 15	
North Carolina	do ³	⁸ 6		1, 6 ⁸			
North Dakota	do	3		2, 5, 8, 11, 14	12-14	8, 11, 14	(4)
Ohio	(1952) ³	2	6	1½, 3, 6	10		(6)
Oklahoma	April 1951	⁸ 6	⁸ 1	3, 6 ⁸	6	⁸ 12	(4)
Oregon	Dec. 1950	3	3	1½, 5	6	10, 15	(6)
Pennsylvania	In revision	2	1	1, 3-4	4	⁸ 7, 11	(1)
Rhode Island	No date	6	1	6 ¹¹	8	⁸ 6, 10	
South Carolina	do	2	1	1½, 3	10	⁸ 6, 10	
South Dakota	do		1½	5-6	6	6	(1)
Tennessee	1953 ³	2	1	1½	About 4	⁸ 6	(7)
Texas	1953	2	1	1, 3, 6	6		(7)
Utah	In revision	1	1	1¼, 3, 6	6	9, 12	(6)
Vermont	Feb. 1954	2	1	1, 3, 6	6	8, 10	(12)
Virginia	(1952) ³	2	6	1½, 3, 6	10		(6)
Washington	In revision ⁵						
West Virginia	March 1955 ³	3	1	1, 3½, 6	9-10		(6)
Wisconsin	May 1952	2	1	2-3, 5, 8, 11, 14	12-14		
Wyoming	(1952) ³	2	6	1½, 3, 6	10		(6)
Alaska	In revision ³	2	3	1½, 3, 6, 10	10		(6)
Hawaii	Nov. 1954 ³	3	6	3, 5, 7	10		
Puerto Rico	Jan. 1950	4	1	¾, 2, 5	6	6, 10	(1)
Virgin Islands	In revision ³	3	3	1½, 3, 7, 10	10		(1)

¹ After Schick test. ² From State plan. No printed policies. ³ Use or planning to use the American Academy of Pediatrics report, 1952. (Date in parentheses indicates the States that adopted the report in lieu of separate policies.) ⁴ No Schick or toxoid sensitivity test. ⁵ Present policies not available. ⁶ After Schick and toxoid sensitivity tests. ⁷ After toxoid sensitivity test. ⁸ Diphtheria only, not DTP or diphtheria-tetanus. ⁹ Reference 6. ¹⁰ No written policies, but description of work is quite up to date. ¹¹ Primary series repeated at 6 years if Schick positive. ¹² Repeated Schick tests used.

Territories make no mention of routine tetanus toxoid booster doses beyond school age (table 2). Two States recommend that persons get a tetanus booster dose every 2 to 3 years. Eleven States and one Territory recommend this dose every 3 years. One State recommends an interval of 3 to 4, and 6 States recommend 3 to 5 years. Two States recommend a booster dose every 4 years, and 3 States recommend boosters every 5 years. Hawaii recommends a tetanus toxoid booster every 8 years, and Massachusetts recommends a 5-year interval through school years, and an interval of 10 years after school. Arkansas will follow the same schedule as Massachusetts.

Smallpox Vaccination Policies

The emphasis placed upon repeated smallpox vaccinations likewise varies from State to State, although nearly all States mention revaccination in the presence of a smallpox epidemic. Eighteen States and two Territories recommend revaccination at 5-year intervals throughout life, while others recommend it every 5 to 6 years, 5 to 7, 5 to 9, or 5 to 10 years (table 2). A few States recommend intervals of 3 years, 3 to 4, or 3 to 5, or 4 to 5 years. Connecticut recommends revaccination "periodically." Nine States and two Territories make no mention in their immunization policies of smallpox vaccinations continued on through school and adulthood, while Oklahoma continues smallpox vaccinations only through school. Ipsen, of the Massachusetts Department of Public Health, recently advocated an interval of 10 years between smallpox vaccinations in adults as providing a level of immunity in the population sufficient to prevent rapid epidemic spread of the disease (6). Arkansas will follow this policy.

Only a few States indicate how soon a smallpox vaccination should be repeated if it fails to take. Pennsylvania permits it to be repeated in 5 days, Missouri permits it in 7 to 9 days, and Arkansas, Michigan, and Oklahoma permit it in 2 weeks. Idaho, Iowa, and Mississippi require a 3-week wait, and New Mexico and West Virginia require 4 weeks between vaccination attempts.

Typhoid Immunization Policies

The giving of immunizations against typhoid fever is subject to wide variation. On one extreme are 10 States and the Virgin Islands which do not carry out this immunization or do not mention it in their policies. On the other extreme, Hawaii requires universal typhoid immunization by law. Most States take a middle ground, recommending typhoid immunization only for individuals exposed to a case of the disease or to a carrier, for individuals forced to use an unsafe water supply (as in disaster areas), for individuals dwelling in or traveling into areas where the disease is endemic, and sometimes for individuals about to go to a summer camp or about to travel generally. Most southern and southwestern States and Puerto Rico place greater emphasis on the immunization, or have done so in the past. These States generally recognize the need for this immunization on a routine basis in portions of their rural areas at the present time.

The interval permitted between typhoid vaccine injections in the primary series is about 1 week in 11 States and 1 Territory, 1 to 2 weeks in 3 States, 1 to 3 weeks in 1 State, and 1 to 4 weeks in 13 States and 2 Territories, and 1 month in 1 State.

A minimum age for starting typhoid immunizations is usually not stated, but in 14 States typhoid vaccine is given at any age when indicated. In 5 States and 1 Territory it is given at age 1 or under when needed, and in 2 States only over age 1.

Of the 37 States and 3 Territories which mention typhoid immunizations, 22, including Arkansas, authorize and encourage the use of intradermal typhoid booster doses, either in their own publications or through endorsement of the American Academy of Pediatrics report. The other States simply do not mention intradermal typhoid booster doses; no State specifically forbids them.

The interval between typhoid booster doses is set at 1 year in 10 States, at 1 to 2 years in 13 States and 1 Territory, at 1 to 3 years in 1 State, at 2 to 3 years in 1 State, and at 3 years in 3 States, including Arkansas. It is not mentioned in the Puerto Rico manual.

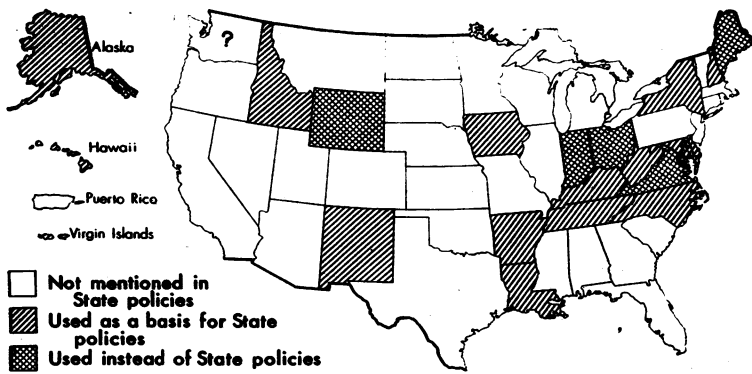


Figure 1.
Use by States of the American Academy of Pediatrics report.

Figure 2.
Minimum ages recommended for starting primary DTP vaccination series.

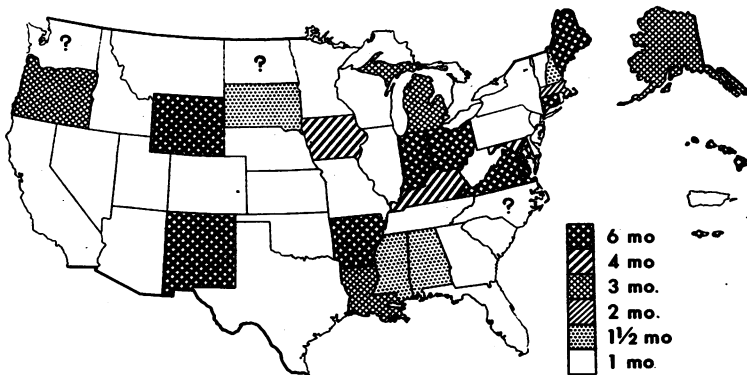
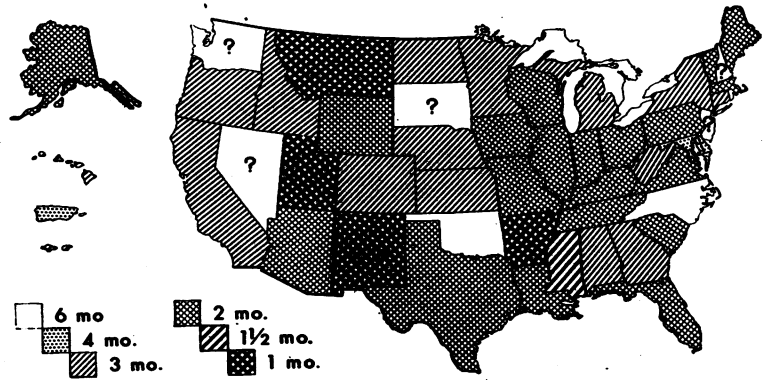
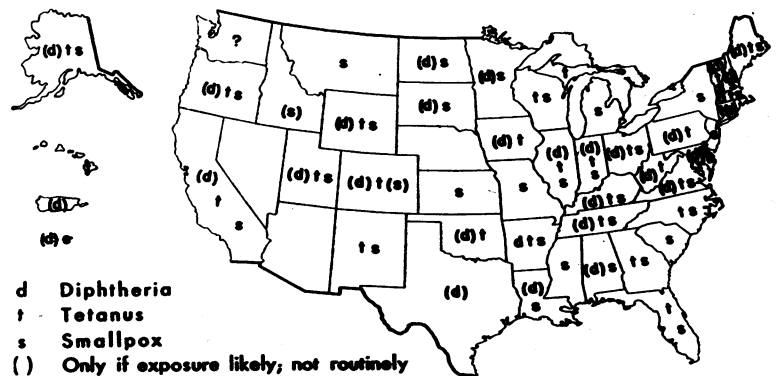


Figure 3.
Maximum intervals allowed between doses in primary DTP vaccination series.

Figure 4.
Diphtheria, tetanus, and smallpox immunizations available or advocated for adults.



d Diphtheria
t Tetanus
s Smallpox
() Only if exposure likely, not routinely

Table 2. Summary of smallpox, tetanus, and typhoid immunization policies in the United States and Territories

State or Territory	Smallpox vaccination first given at age (months)	Smallpox vaccination intervals in adults (years)	Tetanus booster intervals in adults (years)	Typhoid immunization ¹		
				Begin at age (years)	Initial dose intervals (days)	Booster intervals (years)
Alabama	3	5-7	Not used	2	5-10	1.
Arizona	Any age	Not used	do	No mention	Not stated	Not stated.
Arkansas	With 1st DTP	10	10	With 1st DTP	7-28	3.
California	5	5	3-5	No mention	7-28	3.
Colorado	In 1st 12	In epidemic	2-3	1	7	2.
Connecticut	3-6	do	3	No mention	Not stated	Not stated.
Delaware	12	5-9	3			
District of Columbia ⁽²⁾	After DTP	3-4	3-4	No mention	7-21	3.
Florida	5-6	5	5	do	Not stated	Not stated.
Georgia						
Idaho	By 6	In epidemic	Not used	No mention	do	do
Illinois	3-6	3	3-5	Any age	7-10	1-2.
Indiana	6-12	5	3	do	7-28	1-2.
Iowa	⁽³⁾	Not used	3-5	do	7-28	1.
Kansas	No mention	3-5	Not used			
Kentucky	3-6	5-7	2-3	1/2	5-14	2-3.
Louisiana	4	5	Not used	No mention	7-14	1.
Maine	6-12	5	3	Any age	7-28	1-2.
Maryland	6	Not used	Not used	do	7-28	1-2.
Massachusetts	3-9	10 ⁴	10 ⁴			
Michigan	Under 5	5	5	Any age	7-28	1.
Minnesota	3-12	5-6	Not used	No mention	7	1.
Mississippi	1 1/2	5	do	1/2	5-14	1-2.
Missouri	3-4	5	do	Any age	7-10	1-2.
Montana	1/3	3-5	do			
Nebraska	3	Not used	do	No mention	7	1-2.
Nevada	With 1st DTP	do	do	do	Not stated	Not stated.
New Hampshire	Birth-36	5-7	do	Any age	7-10	1-2.
New Jersey	In 1st 12	5	do			
New Mexico	1 1/2	5-10	3	1	7-28	1-2.
New York	3	5	Not used			
North Carolina	Under 3	5	3-5	1	7	1.
North Dakota	3	5-7	Not used			
Ohio	6-12	5	3	Any age	7-28	1-2.
Oklahoma	9	Not used	4	3	7	1.
Oregon	In 1st 12	5	3-5	Any age	7-28	1.
Pennsylvania	do	Not used	4			
Rhode Island	⁽⁵⁾	do	Not used			
South Carolina	5	5-7	do	1 1/2	30	2.
South Dakota	No mention	5	do	No mention	7	1.
Tennessee	In 1st 12	5	3	Any age	7 or longer	1-2.
Texas	5-6	Not stated	Not stated	do	7-28	2.
Utah	3-6	4-5	3-5	1	7-10	1.
Vermont	2	5	3	No mention	Not stated	Not stated.
Virginia	6-12	5	3	Any age	7-28	1-2.
Washington ⁽²⁾						
West Virginia	6	Not used	3	2	7 or longer	1-3.
Wisconsin	In 1st 12	3-5	5			
Wyoming	6-12	5	3	Any age	7-28	1-2.
Alaska	⁽⁶⁾	5	3	do	7-28	1-2.
Hawaii	5	Not used	8	1/2	7-28	2.
Puerto Rico	3-12	do	Not used	No mention	7	Not stated.
Virgin Islands	6	5	do			

¹ Typhoid immunizations not mentioned in policies of Delaware, Kansas, Massachusetts, Montana, New Jersey, New York, North Dakota, Pennsylvania, Rhode Island, Wisconsin, and the Virgin Islands. ² Present policies not available. ³ Before or after DTP. ⁴ As recommended in reference 6. ⁵ Only mentioned as a procedure to be done by private physician. ⁶ With DTP or 1 month later.

Public Education

Some States furnished samples of immunization information available to parents, and presumably most States have such material. Some of these pamphlets are very thoughtful and attractive, for example, those from Connecticut, Delaware, Idaho, Massachusetts, Minnesota, Nebraska, Wisconsin, and Hawaii.

Special emphasis is put on public information and education concerning immunizations in various ways by different States. Arkansas stresses information for the public and for school authorities in its new question and answer manual concerning immunizations. Delaware sends a letter concerning immunizations to every family as the new infant nears 4 months of age. The Iowa immunization manual places thoughtful emphasis on the approach to immunization, carefully preparing parents and children for the experience, and educating them on the nature and value of the immunizations.

In Kansas distribution of immunization information is made through the schools. Kentucky's manual contains a helpful question and answer section intended to prepare the person giving immunizations for some questions commonly asked by parents. Maryland's immunization schedule places emphasis on health education of the family concerning the nature, need, schedule, and value of immunizations at the time they are given.

Nebraska has a manual for community leaders concerning immunization programs, and, for teachers, quite extensive classroom discussion guides on immunizations. New Jersey has a thorough manual on communicable diseases for its schools. Both North and South Dakota stress preplanned public education by many routes.

Puerto Rico has prepared immunization policies in Spanish. Vermont uses a Canadian leaflet printed in French for its French-speaking population. There are doubtless many other special considerations and measures taken to assure public education in various States, which did not come to this reviewer's attention.

Tuberculin Testing

Tuberculin testing is considered along with the immunization program in certain States.

Idaho recommends tuberculin testing of children at age 1 and again at age 3. Iowa mentions routine tuberculin testing of children. Michigan advocates tuberculin testing of children at ages 2 to 3. Texas uses tuberculin testing in its well child clinics, but cautions against mass school tuberculin testing without adequate followup.

Discussion and Conclusions

The general impression gained in this comparative review of selected aspects of the immunization policies of the States and Territories is that some of the variation from one area to another is desirable and sensible, but much of the variation is needless and confusing. There should always be room for individualization of immunization programs, but there is no reason why there could not be more common agreement on standards of reference. The increasing use of the American Academy of Pediatrics report represents a trend in this direction.

One characteristic of immunization policies stood out. In virtually no other medical field have action policies been laid out with so little regard for citation of references or sources. In a sense, those States which have referred to the American Academy of Pediatrics report have cited authority, but the report itself (1952 edition) cites not a single reference to original studies. Apparently it has relied solely upon the organization's name to persuade the reader of the validity of the recommendations. Iowa, Kentucky, Oregon, Utah, and West Virginia present exceptions to this general observation, as they cite some references in their immunization policies. The manuals of Michigan and Pennsylvania are so thoughtful and thorough that they could not have been written without extensive knowledge of original studies, even though no references were made to such studies.

Massachusetts, with its own extensive program of original investigations of antigens and immunization schedules, occupies a unique position. Arkansas, with no facilities for original investigation, has felt a compulsion to cite the studies of others in justifying the current revisions made in its immunization policies and has embodied this bibliography in a question and answer manual on its immunization policies.

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technical publications

Research Grants and Fellowships Awarded by the Public Health Service in 1954

Public Health Service Publication No. 423. 1955. 70 pages. 25 cents.

This booklet lists alphabetically by State and institution all research grants and research fellowships awarded by the National Institutes of Health, Public Health Service, for the period July 1, 1953, through June 30, 1954. There were 2,855 research grants in the amount of \$29,951,150 and 490 research fellowships in the amount of \$2,132,004.

These grants and fellowships went to individuals in 372 institutions, located in 43 States, 2 Territories, the District of Columbia, and in 13 foreign countries.

Premarital Health Examination Legislation

Public Health Service Publication No. 383. 1954. 114 pages. 40 cents.

A compilation of the laws now in effect in 40 States and in Hawaii and Alaska, requiring a blood test and a physical examination for venereal disease as prerequisites for obtaining a marriage license, is contained in this publication. A history of the efforts to obtain enactment and an

analysis of the effectiveness of such laws are included.

A copy of the law in effect in each State or Territory is reproduced with citations to the legal sources.

Studies on Household Sewage Disposal Systems—Part III

Public Health Service Publication No. 397. 1954. 134 pages. \$1.00.

Part III of these studies includes data and findings on single and multicompartment septic tanks, sludge and scum accumulation, soil-absorption capacity, clogging characteristics of septic-tank effluent, effect of zeolite softener salts, effect of ground garbage and synthetic detergents on household disposal systems, evapotranspiration and plant growth, and investigation of various distribution devices, sludge and scum measuring devices, design improvements, and septic-tank "cleaning" products.

Parts I and II of this report dealt with studies on individual sewage-disposal systems conducted at the Robert A. Taft Sanitary Engineering Center (then the Environmental Health Center), in Cincinnati, Ohio, from November 1946 to July 1949. Part III continues from that point to the end of the studies in June 1953.

The broad program of studies was financed jointly by the Housing and Home Finance Agency and the Public Health Service.

Poultry Ordinance, 1955

Public Health Service Publication No. 444. 1955. 37 pages.

This model ordinance prepared for use by State and local governments to supplement Federal regulations came about through close cooperation among the Federal agencies concerned, State and local health and agricultural authorities, and the representatives of the poultry industry.

The ordinance embodies the best available information on poultry sanitation at the present time. It will be revised as new experience or research indicate. The current issue was prepared with the assistance of a public health-industry committee.

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