

A Compulsory School Immunization Program in Tennessee

EUGENE W. FOWINKLE, MD, MPH
STEVEN BARID, BS
CLARA McD. BASS, MPA

ONE OF THE MOST COMPREHENSIVE compulsory school immunization laws in the nation was enacted by the General Assembly of the State of Tennessee in April 1978. In Tennessee, it was decided that the task of increasing immunization levels could best be accomplished through legislation containing a strong penalty clause for noncompliance. The law, which amended existing legislation enacted in 1967, was passed unanimously by both houses of the State legislature. It has three important features:

1. Extends coverage to all children attending State-supported schools, grades kindergarten through 12. The earlier law applied only to those entering school for the first time.
2. Imposes a penalty on the school system for noncompliance. Any child not legally immunized cannot be counted in the average daily attendance, which is the basis for the distribution of State funds.
3. As in the 1967 legislation, there are two exemptions to immunization: (a) medical contraindication and (b) objection for religious reasons, expressed as follows: "when, in the absence of an epidemic or immediate threat, a child's parent or guardian objects on the grounds that such a measure would conflict with the religious tenets and practices of a well recognized religious denomination whose teachings include reliance on prayer or spiritual means alone for healing, of which he is an adherent or member."

Dr. Fowinkle is Commissioner and Ms. Bass is a health administrator, Tennessee Department of Public Health. Mr. Barid is a general program consultant with the Division of Preventive Medicine, U.S. Public Health Service.

Tearsheet requests to Eugene W. Fowinkle, MD, Commissioner of Public Health, Cordell Hull Bldg., Nashville, Tenn. 37219.

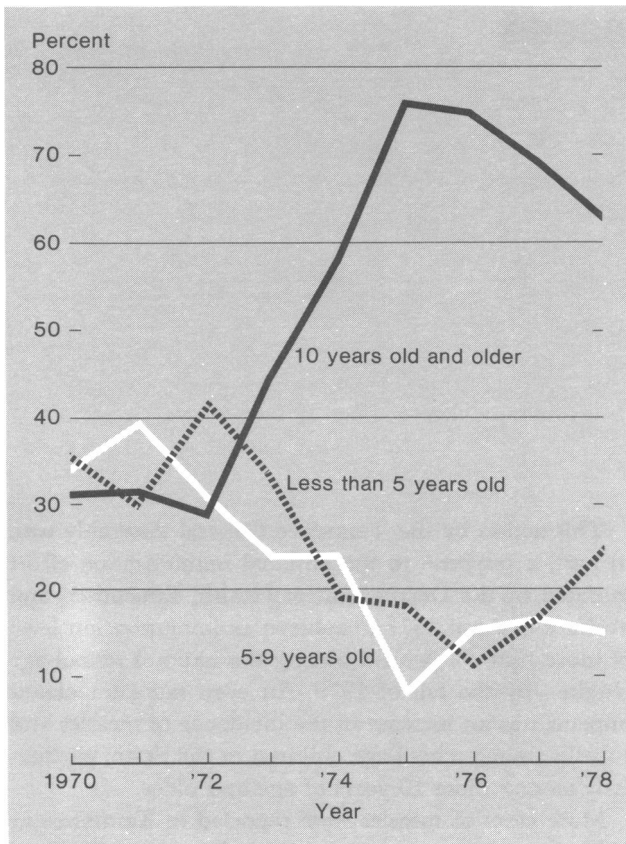
This action by the Tennessee General Assembly was, in part, a response to the national immunization effort initiated by the Department of Health, Education, and Welfare in April 1977 to achieve an immunization level of more than 90 percent among the nation's school-age children by the fall of 1979. An even more important impetus was an increase in the incidence of measles and rubella among school-age children in the State, particularly among those 10 years of age and older.

More cases of measles were reported in Tennessee in 1977 than at any time since 1971. By mid-1978, more cases of measles were reported than in all of 1977, when 84 percent of the reported cases were predominantly among school-age children 5 years of age and older. Children age 10 and older accounted for 68 percent of the total. The following tabulation shows the number of measles cases reported in Tennessee for the years 1970-78. Figure 1 illustrates the percentage distribution, by age group for the same period.

Year	Number of cases
1970	608
1971	1,028
1972	195
1973	164
1974	54
1975	165
1976	187
1977	768
1978	952

Although rubella has not been reported by age group in Tennessee long enough to provide similar data, investigations led State immunization officials to believe that the incidence of this disease also had shown a marked upward trend and had occurred in a similar age

Figure 1. Percentage distribution of reported measles cases, by age group, Tennessee, 1970-80



distribution. In 1977, Tennessee reported 1,790 cases of rubella, which represented a case rate of 41.7, the second highest in the nation (1).

While Tennessee lawmakers were aware of President Carter's campaign to achieve an immunization level of more than 90 percent by the fall of 1979, they were also following a well-established pattern of acting to reduce an existing increase in cases. Outbreaks of childhood infectious disease among school-age children are not as devastating now as outbreaks of earlier years, but they are viewed as unnecessary because today they are preventable. The infrequent incidences of physical impairment and death that result from these diseases are even more tragic because they are unnecessary.

Efforts to strengthen the existing school immunization legislation began in January 1978 when the Tennessee Department of Public Health proposed that an amendment be included in the legislative package, submitted by the Governor for consideration by the General Assembly, that would extend coverage to all children attending school, not just those who are entering. The Governor strongly supported the measure.

After deliberating the issue, the legislators concluded

that a penalty provision should be added to the amendment. The legislators were convinced that the 1967 school immunization law was inadequate because it lacked sufficient sanction, and they decided that the most appropriate and effective penalty that could be imposed would be to withhold State school funds, based on average daily attendance figures.

Public Chapter 922, enacted on April 27, 1977, became effective on July 1. Since the legislature did not appropriate additional State funds for the immunization initiative, the department of public health applied for a grant to increase existing Federal funding for this purpose. A grant of \$918,000 was given for the 18-month period, July 1, 1977, through December 31, 1978. The greatest costs, however, were the nursing and clerical time provided by local health departments; additionally, the State budgeted \$657,160 from other related sources for the 18-month grant period.

The deadline for compliance with the requirements of the act was set for October 2, 1977, just 13 weeks after it became effective. Within this time frame, the goal—achieving immunization of almost the entire school population of the State against vaccine preventable disease—was a challenge, because a large portion of these children were known to be inadequately immunized. The following table, which provides an estimate of the breakdown, by disease category, of children 14 and under

Table 1. Instructions for determining legal¹ immunization status of students, Tennessee

All students	Alternative for students 7 years and older
1. 4 doses of DPT (diphtheria, pertussis, tetanus) vaccine	3 doses of DPT vaccine or TD (tetanus, diphtherial) vaccine or a combination of these vaccines—1 given on or after the 6th birthday.
2. 4 doses of poliomyelitis vaccine	3 doses of poliomyelitis vaccine—1 given on or after the 6th birthday.
3. 1 dose of measles vaccine—given on or after 1st birthday or history of measles diagnosed or attested to by a physician	1 dose of measles vaccine—given on or after 1st birthday or history of measles diagnosed and attested to by a physician.
4. 1 dose of rubella vaccine—given on or after 1st birthday (13-year-old females need not receive rubella vaccine)	1 dose of rubella vaccine—given on or after 1st birthday (13-year-old females need not receive rubella vaccine).

¹ Legal Immunizations are those required for a child to attend school. NOTE: A student is legally immunized if he or she meets the standards of items 1-4.

who were inadequately immunized in March 1978, indicates the size of the job.

<i>Vaccine</i>	<i>Number</i>	<i>Percent</i>
DTP	179,800	17
Measles	134,000	13
Poliomyelitis	187,000	18
Rubella	¹ 106,500	13

¹ 12 years and under.

The commissioners of public health and education met in early May 1977 to discuss implementation of the legislation and to plan a course of action. The Governor appointed an Immunization Action Committee, which included representatives for such organizations as the Tennessee Congress of Parents and Teachers, the Tennessee Chapter of the American Red Cross, and the Tennessee Education Association. The State PTA, whose president headed the committee and was the lead agency, spearheaded lobbying efforts for passage of the legislation. Immunization representatives helped organize volunteer efforts in the nine health regions and four metropolitan areas of the State. The cooperation of these groups was important in (a) getting the legislation passed, (b) publicizing the campaign, and (c) providing volunteers to help identify children needing immunization.

Vaccination Requirements

According to the act, the department of public health was responsible for determining what vaccines a child must have to be considered legally immunized. The department specified a reasonably minimum group of vaccines, including only those that provide basic protection from widespread epidemics—diphtheria, tetanus, pertussis, poliomyelitis, measles, and rubella. Dose requirements are described in table 1. Children were allowed to attend school if they had received the minimum required doses for their ages. If they were inadequately immunized they were required to receive the initial or next in series dose.

The department of public health also was responsible for assuring that the local health departments in all 95 Tennessee counties and the 9 regional health departments had the necessary personnel and resources to meet the needs of their communities. At the beginning of the summer, only rough estimates could be made of what would be needed in terms of vaccine supplies, additional personnel, expanded clinic hours, and special clinics.

Physicians and other health professionals were notified of the legislation and informed of developments in the immunization campaign through the monthly newsletter of the Tennessee Department of Public Health Communicable Disease Division. Local and regional health department personnel were informed through

memorandums from the commissioner and the communicable disease division central staff.

As specified in the act, parents or guardians were responsible for having their children immunized—only two exceptions were made: objection for religious reasons and medical contraindication. The Tennessee Department of Education was responsible for enforcing the legislation and for keeping the immunization records of each child, kindergarten through 12th grade, in the public school system.

Through memorandums, the commissioner of the department of education informed the State's public school superintendents of the requirements of the act and advised them of procedures to implement it. Members of the communicable disease division field staff held numerous consultations with school personnel about technical matters of compliance.

After the 1978–79 school year began, new information concerning a child's immunization status had to be signed and dated by a health provider. The form for the certification of immunization, developed by the department of public health, and approved by the Tennessee Chapter of the American Academy of Pediatrics, was designed to be as simple as possible, yet to include all essential information (fig. 2).



Figure 2. Certification form for immunization

1. Child's Name _____ 2. Age _____ 3. Birthdate _____ 4. Sex _____

5. Parent's Name _____ 6. Phone No. _____

7. Address _____
Street City State

Please Record the Number and Date of the Last Dose Received.

8. Vaccine	9. What was the date of the last dose?	10. Was this dose the first, second, third, fourth or fifth?
D.P.T. (Diphtheria-Whooping Cough-Tetanus)		
Td (Tetanus-Diphtheria)		
Rubeola (Measles)		
Rubella		
Polio		
*Mumps (see footnote)		

The above information reflects the immunization status according to the best available information of the above named child as of the date of the provider's signature.

11. Health Provider's Signature or Stamp _____ Date Signed _____

*Not required by law for school attendance

TDPH-1901
7/79

Implementation

To implement this legislation, a primary need was adequate public notice that the law would be in effect by the beginning of the next school year. This was accomplished by various means—a news conference held by the commissioners of public health and education and the president of the State PTA, distribution of media information packets through regional health departments, news releases, radio and television spot announcements, and feature stories in newspapers. As a public service, newspaper editors were asked to print copies of the certification form so that parents, physicians, and school personnel could become familiar with the format.

The news media were cooperative during the immunization campaign and were, to a large extent, responsible for attainment of a high level of public awareness. In middle and late August 1978, as the opening of school approached, lines of children waiting to receive vaccinations at local health departments were the subject of many featured news items on radio, television, and in newspapers across the State.

The attempt to ensure that a school population of approximately 846,000 had been adequately immunized

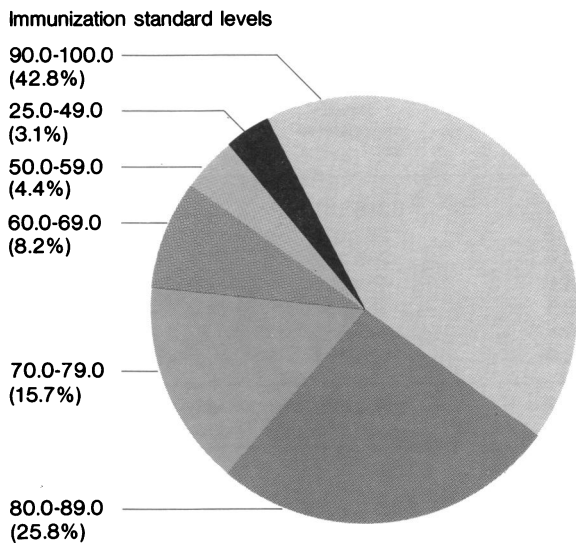
was an enormous task. Although distribution of vaccine supplies ran smoothly, local health departments faced a variety of problems, including insufficient medical and clerical personnel, clinic scheduling, and traffic flow.

In schools, clerical problems involved in researching, updating, and establishing health records of nearly a million children added tremendously to the usual administrative tasks associated with school openings. Private physicians experienced heavy patient loads, and many found it necessary to hire additional personnel to help research patient records, administer vaccines, and complete certification forms. Parents and children had to endure long waiting lines at clinics and physicians' offices.

Despite these difficulties, the campaign received strong support from the public, physicians, and the health and education personnel. The goal of the campaign—the protection of virtually the entire school population from vaccine preventable diseases—had strong endorsement.

Cooperation and coordination between the department of education and the department of public health were excellent, in general. Traditionally, there had been differences between these two departments regarding compulsory school immunization, and the differences

Figure 3. Distribution of schools by students' immunization levels, audit of selected schools, October 1978



were, to a small extent, evident in this campaign. Although both agreed on the purpose, health officials had a greater interest in the outcome of the program, but they were dependent on school personnel for enforcement. School officials, naturally, were more interested in getting children enrolled and attending school, and they resented any disruption in the education process.

Figure 3 and table 2 indicate the success of the campaign and the high degree of cooperation. Figure 3 is not based on a random sample and does not represent the school system as a whole. The schools were selected because they were known to have had low immunization levels before the campaign. At least 1 school from each of the 148 school systems was included. An average of 83.7 percent compliance among these schools, achieved by October 30, 1978, was considered an indication that

the purpose of the campaign was being accomplished. An audit of all school systems in May 1979 showed that 95.3 percent of all children in State schools, grades kindergarten through 12, were considered legally immunized.

The traditional problem in enforcing compulsory school immunization laws, parental objection for religious reasons, did not present a significant obstacle since exemptions requested for both medical and religious reasons amounted to only 0.2 percent.

Conclusion

The success of the 1978-79 school immunization program in Tennessee can be attributed to the legislation containing a strong penalty clause and the efficient way it was administered. Although it may be possible to achieve comparable results without the use of such a sanction, it is unlikely that it could be accomplished within the same stringent time and cost limitations.

Table 3 shows that 695,341 more or 1½ times more vaccine doses were administered by health departments in 1978 than during the same period in 1977. Among students 10 years and older, 563,964 more doses were given, more than 6 times the number given in 1977. An unknown but significantly large number of vaccine doses also were administered by private physicians.

It is too soon to estimate the total effect of the 1978-79 immunization campaign on the morbidity of vaccine preventable disease, but the reduction in measles and rubella cases is already significant. Table 4 shows the reduction in the number of measles and rubella cases reported January-September for 1978 and 1979.

The 60 cases of measles reported during the first 9 months of 1979 represent a 93 percent reduction over the same period in 1978, considerably better than the national average reduction of 50.5 percent (2). Inter-

Table 2. Audit of immunization status of school children, May 1979, Tennessee

Region	Total	Legally Immunized		As Immunized as can be		Exemptions ¹		Total legally immunized		Total not legally immunized	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
First Tennessee ...	81,453	77,437	95.1	1,536	1.9	532	0.6	79,505	97.6	1,948	2.4
East Tennessee ...	155,550	145,833	93.8	2,357	1.5	329	0.2	148,519	95.5	7,031	4.5
Southeast	91,294	85,050	93.2	3,523	3.9	181	0.2	88,756	97.2	2,538	2.8
Upper Cumberland .	45,700	43,861	96.0	720	1.6	134	0.3	44,715	97.8	985	2.2
Mid-Cumberland ..	170,123	161,628	95.0	3,848	2.3	301	0.2	165,777	97.4	4,346	2.6
South Central	60,131	57,297	95.3	848	1.4	125	0.2	58,270	96.9	1,861	3.1
Northwest	47,865	45,491	95.0	968	2.0	228	0.5	46,687	97.5	1,178	2.5
Southwest	40,875	38,681	94.6	1,692	4.1	82	0.2	40,455	99.0	420	1.0
Memphis-Delta	152,817	150,564	98.5	1,773	1.2	120	0.1	152,457	99.8	360	0.2
Total	845,808	805,842	95.3	17,267	2.1	2,032	0.2	825,141	97.6	20,667	2.4

¹ Religious or medical reasons.

Table 3. Comparison of doses of vaccine administered, by antigen, for years 1977 and 1978, with percentage of children in age group 10 and older

Antigen	1977			1978		
	Doses administered	10 and older		Doses administered	10 and older	
		Doses	Percent		Doses	Percent
Diphtheria	232,874	19,513	8.4	385,161	152,719	39.7
Tetanus	236,463	22,768	9.6	289,930	156,988	40.3
Pertussis	203,747	912	0.5	209,705	3,494	1.7
Poliomyelitis	224,059	10,381	4.6	415,366	171,740	41.4
Measles	85,750	34,584	40.3	188,637	117,940	62.5
Mumps	34,900	283	0.8	63,548	4,114	6.5
Rubella	45,696	3,649	8.0	106,483	49,059	46.1
Total	1,063,489	92,090	8.7	1,758,830	656,054	37.3

estingly, of the 60 cases of measles reported, 23 occurred in 1 outbreak in a college. This church-affiliated college did not require immunization—a policy that has since been changed.

As a result of the 1978–79 campaign, the immunization records of virtually the entire school population of Tennessee are now current and complete. To ensure that the desired immunization level is maintained and that State school funds are distributed fairly, it will be necessary to certify the immunization status of school children annually. A uniform reporting system devised for this purpose includes a self-survey by school systems, which is verified by an audit of a 5 percent sample by immunization program officials.

A weakness of the Tennessee compulsory immunization legislation is its failure to include non-State supported schools in the penalty provision. Although the vast majority of the 55,000 children in private day care centers and the 75,000 in private schools, grades kindergarten through 12, are complying with the law voluntarily, they are unaffected by the State's withholding of school funds penalty. Some States have taken measures

to avoid this problem: in North Carolina, parents of children who are not properly immunized can be fined; in New York, school administrators can be fined for each case of noncompliance.

From the earliest years of immunization efforts to the present, one of the problems in school immunization has been that periods of intense activity, usually stimulated by fear of epidemics, are followed by periods of complacency and apathy. It is anticipated that the penalty provision included in the Tennessee legislation will alleviate this problem. Health and education officials were gratified that by the opening of the 1979–80 school year, the immunization level of more than 95 percent had been achieved, and they are confident that this level can be maintained.

References

1. Center for Disease Control: Reported morbidity and mortality in the United States: annual summary 1977. Vol. 26, No. 53, September 1978, 80 pp.
2. Center for Disease Control: Selected highlights of measles activity for the week ending September 8, 1979. CDC, Atlanta, Ga.

Table 4. Comparison of the number and percentage of reported cases of measles and rubella, by age groups, January–September 1978 and 1979

Disease and year	0–4 years		5–9 years		10–14 years		15–19 years		20 and over		Unknown		Total	Percent difference
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
Measles:														
1978	224	23.6	135	14.2	304	32.0	237	25.0	43	4.5	6	.6	949	—94
1979	11	18.3	8	13.3	8	13.3	19	31.7	14	23.3	0	0	60	
Rubella:														
1978 ¹													201	—52
1979	20	20.6	2	2.1	3	3.1	20	20.6	28	28.9	24	24.7	97	

¹ Data not available.