

# Increasing Appropriate Vaccination: Vaccination Requirements for Child Care, School, and College Attendance (2009 Archived Review)

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## Review Summary

### Intervention Definition

Vaccination requirements are laws or policies requiring vaccinations or other documentation of immunity as a condition of child care, school, and college attendance. Their purpose is to reduce the incidence of vaccine-preventable disease and associated morbidity and mortality by increasing vaccination rates.

Laws are created by states, with the specific vaccines required established by the legislature and embodied in statutes or adopted as administrative rules by health or education departments. Institutions, such as colleges and private schools, may establish additional vaccination policies for attendance or residence.

Vaccination requirements vary across jurisdictions by:

- Comprehensiveness
- Acceptable documentation of vaccination or immunity
- Access to exemptions (especially nonmedical exemptions)
- The type and consistency of enforcement

### Summary of Task Force Recommendation and Finding

The Community Preventive Services Task Force recommends vaccination requirements for child care, school, and college attendance based on strong evidence of effectiveness in increasing vaccination rates and in decreasing rates of vaccine-preventable disease and associated morbidity and mortality.

These findings are based on studies demonstrating effectiveness of vaccination requirements:

- For attendance in a variety of settings
- For an array of recommended vaccines
- In populations ranging in age from early childhood to late adolescence

### About the Systematic Review

The Task Force finding is based on evidence from a Community Guide systematic review published in 2000 (Briss et al., 9 studies, search period 1980-1997) combined with more recent evidence (18 studies, search period 1997-2009). The systematic review was conducted on behalf of the Task Force by a team of specialists in systematic review methods, and in research, practice, and policy related to increasing appropriate vaccination. This finding updates and replaces the 2000 finding on Vaccination Requirements for Child Care, School, and College Attendance.

### Results from the Systematic Review

#### Previous Review (search period 1980-1997)

Nine studies assessing the effects of the intervention were included in the evidence review and found the following favorable outcomes.

- Overall change in vaccination rates: median increase of 15 percentage points (range of values: 5 to 35 percentage points; 3 studies).
- Vaccination requirements were associated with reduced incidence of measles, mumps, and Hib (6 studies).

### Updated Evidence (search period 1997-2009)

Eighteen studies were identified during the updated search period, all of which showed favorable effects of the intervention on the following outcomes.

- Overall change in vaccination rates: median increase of 34.3 percentage points (interquartile interval [IQI]: 11.7 to 46.6 percentage points; 9 studies with 12 study arms).
  - Six studies that used different measures to determine the impact of the intervention also demonstrated improvements in vaccination rates.
- Vaccination requirements were associated with reduced incidence of hepatitis A and acute hepatitis B (2 studies).
- One study from Japan documented increases in excess mortality of influenza and pneumonia following the removal of vaccination requirements and a school based program (1 study).

### Applicability

- Results from this review are based on studies that provided vaccinations for hepatitis A and B; influenza; measles, mumps and rubella (MMR); varicella; and the childhood series as a whole.
- The Task Force considers these results applicable for all required vaccinations.

### Considerations for Implementation

The following considerations are drawn from studies included in the evidence review, the broader literature, and expert opinion.

- Depending on the state, children must be vaccinated against some or all of the following diseases: mumps, measles, rubella, diphtheria, pertussis, tetanus, and polio (see [State Vaccination Requirements](http://www.cdc.gov/vaccines/imz-managers/laws/state-reqs.html) [www.cdc.gov/vaccines/imz-managers/laws/state-reqs.html]).
- There is wide variability in implementation and enforcement of vaccination requirements across states and localities (Thompson et al. 2007).
- States allow different types of exemptions to school immunization requirements. As of 2014, all states allow medical exemptions, 46 states plus the District of Columbia permit religious exemptions, and 19 states have personal belief exemptions ([Immunization Action Coalition](http://www2a.cdc.gov/nip/schoolsurv/schlmmRqmt.asp) [www2a.cdc.gov/nip/schoolsurv/schlmmRqmt.asp]).

### Economic Evidence

An overall economic conclusion cannot be reached because only one study specific to the hepatitis B vaccination was found.

- The study was based on a small sample of practices in 13 states that did or did not require hepatitis B vaccination for school attendance. Considering the costs of the vaccine and its administration, results showed that requiring hepatitis B vaccinations for school attendance cost an estimated \$52,981 (2009 U.S. dollars) per case of liver cirrhosis averted.

## Task Force Finding and Rationale Statement

### Intervention Definition

Vaccination requirements are laws or policies requiring vaccinations or other documentation of immunity as a condition of child care, school, and college attendance. Their purpose is to reduce the incidence of vaccine-preventable disease and associated morbidity and mortality by increasing vaccination rates. Laws are created by states, with the specific vaccines required established by the legislature and embodied in statutes or adopted as administrative rules by health or education departments. Institutions, such as colleges and private schools, may establish additional vaccination policies for attendance or residence. Vaccination requirements vary across jurisdictions by comprehensiveness, acceptable documentation of immunity, access to exemptions (especially nonmedical exemptions), and the type and consistency of enforcement.

### Task Force Finding (June 2009)

The Community Preventive Services Task Force recommends vaccination requirements for child care, school, and college attendance based on strong evidence of effectiveness in increasing vaccination rates and in decreasing rates of vaccine-preventable disease and associated morbidity and mortality. These findings are based on studies demonstrating effectiveness of vaccination requirements for attendance in a variety of settings, for an array of recommended vaccines, and in populations ranging in age from early childhood to late adolescence.

### Rationale

In the original review the Task Force found sufficient evidence on the effectiveness of vaccination requirements for child care, school, and college attendance. The Task Force now finds strong evidence of effectiveness based on its updated systematic review (search period 1997-2009). The Task Force notes that the continuing effectiveness of such requirements may depend on consistent enforcement, ease of obtaining vaccinations relative to that of obtaining nonmedical exemptions, and adequacy of financial, logistical, and community support for implementation.

Our previous review (search period 1980-1997) included 9 studies, all of moderate or least suitability design. A summary effect estimate was determined from three studies evaluating changes in vaccination rates. The overall median absolute increase in vaccination rates was 15 percentage points with a range of 5 to 35 percentage points. Six studies evaluated changes in rates of vaccine-preventable disease. Three nation-wide studies found that the incidence of measles and mumps was lower in states with immunization requirements for school-aged children, and that low-incidence areas were more likely to enforce school entry laws by excluding non-compliant children from attendance. Three additional studies reported: (1) lower incidence of mumps during an outbreak in children subject to a vaccination requirement; (2) greater declines in Hib incidence among child care attendees subject to vaccination requirements than for New York State as a whole; and (3) lower risk for measles outbreaks in colleges with pre-matriculation immunization requirements.

This updated review (search period 1997–2009) included 18 additional studies. Nine studies with 12 study arms provided a common measurement of change in vaccination rates. These studies observed a median absolute increase in vaccination rates of 34.3 percentage points (interquartile interval [IQI]: 11.7 to 46.6 percentage points).

Additional evidence on effectiveness was provided by six studies measuring changes in vaccination rates that could not be included in the summary effect estimate.

Three studies identified in the update review provided evidence that vaccination requirements are also effective in decreasing rates of vaccine-preventable disease. One U.S.-based study reported a decline in hepatitis A incidence after the implementation of a child care entry requirement in response to an outbreak. One study from Italy observed reductions in rates of hepatitis B disease attributable to the implementation of vaccination requirements and school and community based vaccination programs. A study from Japan documented increases in excess mortality rates among younger children due to influenza and pneumonia, after the removal of a national influenza vaccination mandate and school based immunization program.

Although most of the included intervention studies evaluated state laws establishing vaccination requirements for school attendance, including primary, middle, and secondary grades, the Task Force considers the available evidence to be applicable to college and child care settings.

The single available economic study examined the impact of a hepatitis B vaccination requirement, providing limited information on the cost of intervention and the cost per case of liver cirrhosis averted. The number of cases of liver cirrhosis averted was modeled for the population in the study area using the incremental coverage achieved within the study sample and estimates from the literature for disease incidence and vaccine efficacy.

Findings from two included intervention studies suggest that vaccination requirements may confer additional benefits by improving vaccination rates among racial and ethnic minorities and lower SES populations, thereby reducing health disparities. Although not directly evaluated by studies in this review, vaccination requirements may also increase contact between youth (especially adolescents) and their primary care providers, increasing opportunities for the provision of other preventive health services.

A potential harm of these interventions includes the possible loss of support for immunization programs when the public has not been adequately informed or engaged in the planning and implementation of new vaccination mandates. Vaccination requirements may also lead to higher rates of nonmedical exemptions when perceived by the public as more convenient than obtaining a vaccination or as inconsistently enforced. The Task Force identified no specific evidence on these potential harms in this review.

Two important aspects of vaccination requirements have been identified in the broader literature as potentially limiting conditions of their effectiveness: inconsistent enforcement of requirements and the relative ease of obtaining nonmedical exemptions. The Task Force calls for additional research to assess the relationship between variations in enforcement or access to nonmedical exemptions on vaccination rates and rates of vaccine-preventable disease. Also of interest are factors that facilitate or impede the implementation and enforcement of vaccination entry requirements in various settings, particularly child care centers and colleges. More research is also needed to assess the economic costs and benefits of these interventions.

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## Disclaimer

The findings and conclusions on this page are those of the Community Preventive Services Task Force and do not necessarily represent those of CDC. Task Force evidence-based recommendations are not mandates for compliance or spending. Instead, they

provide information and options for decision makers and stakeholders to consider when determining which programs, services, and policies best meet the needs, preferences, available resources, and constraints of their constituents.

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