Community Preventive Services Task Force

Increasing Appropriate Vaccination: Vaccination Requirements for Child Care, School, and College Attendance

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 (February 2016)

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 (VPD) 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

Basis of Finding

The Task Force finding is based on evidence from 32 studies (search period January 1980 – July 2015) that examined the effectiveness of vaccination requirements on vaccination coverage rates or changes in vaccine-preventable disease or illness.

Seventeen studies with 24 study arms examined the effectiveness of state or local vaccination requirements on changes in vaccination rates. The median change was an increase of 18 percentage points (Interquartile interval [IQI]: 10 to 35 percentage points). Five additional studies examined changes in vaccination rates or series completion that could not be included in the summary effect estimate, although results were generally in the direction of increased coverage.

Ten studies examined the effectiveness of vaccination requirements on changes in vaccine-preventable disease rates or associated morbidity. Five of these studies were nationwide assessments of school entry requirements. Three U.S. 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.

One study from Italy found 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 found 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.

Five studies evaluated other vaccination requirements and found: (1) lower incidence of mumps during an outbreak in children subject to a vaccination requirement; (2) greater declines in *Haemophilus influenza* type b disease incidence among child care attendees subject to vaccination requirements than for New York State as a whole; (3) lower risk for measles outbreaks in colleges with pre-matriculation immunization requirements; (4) decline in hepatitis A disease incidence following implementation of a child care entry requirement in response to an outbreak, and (5) reduction in influenza-associated hospitalizations among children following a child care entry requirement.

Applicability and Generalizability Issues

Included studies were mostly conducted in the United States (30 studies) and examined school entry requirements (24 studies). Studies provided evidence of effectiveness for both primary school entry requirements (11 studies) and requirements for middle/high school students (13 studies). Six studies examined vaccinations for child care attendance and findings are applicable to these settings. Although only one study evaluated vaccination requirements for college (1 studies) findings are likely applicable to these settings.

Included studies examined changes in coverage rates or disease incidence for vaccinations to protect against measles-mumps-rubella (16 studies), tetanus (8 studies), pertussis (8 studies), varicella (8 studies), *Haemophilus influenza* type b disease (5 studies), hepatitis A (2 studies), hepatitis B (14 studies), meningococcal disease (3 studies), influenza (2 studies), and human papillomavirus (1 study). Task Force findings are applicable or likely applicable for the range of vaccines recommended for children and adolescents.

Data Quality and Study Design Issues

Included studies were conducted as cross-sectional assessments (10 studies), time series (5 studies), before-after assessments with comparison populations (4 studies), before-after assessments without comparison population (4 studies) retrospective cohort (3 studies), posttest only (2 studies) and case control (1 study). Common limitations affecting this body of evidence were differences in measurement of change in outcomes and confounding by secular trends or community characteristics.

Other Benefits and Harms

Findings from two included studies suggest that vaccination requirements may improve vaccination rates among racial and ethnic minorities and children in low-income communities, 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.

Vaccination requirements were not associated with any harms in the identified studies. Vaccination and documentation requirements may lead to higher rates of nonmedical exemptions (where permitted) when perceived by the public as more convenient than obtaining a vaccination or documentation, or as inconsistently enforced.

Economic Evidence

Two studies from the United States reported economic benefits exceeded the cost of intervention. Both studies, however, reported only partial assessments that could not be used to draw a conclusion.

In both studies, the intervention cost included only the cost of the vaccine and its administration; neither the cost of patient or parent time off of work or the administrative cost of tracking and enforcement were included. The benefits side modeled societal savings in healthcare costs for an assumed population (as a result of averted chicken pox cases for

one study of the Varicella vaccine and averted cases of liver disease and cirrhosis for a study of the hepatitis B vaccine). Neither study considered the economic benefits from productivity gains of averted mortality and morbidity.

Considerations for Implementation

State vaccination requirements, which include school vaccination and exemption laws and health department regulations, permit medical exemptions for students with medical contraindications to receiving a vaccine or vaccine component and may allow nonmedical exemptions for religious reasons or philosophic beliefs. (Seither et al., 2015) Updated information on vaccination requirements for each state and setting are available (www.immunize.org/laws/), and a compilation of state school and child care vaccination laws, including both statutes and regulations, is available through CDC (www.cdc.gov/phlp/publications/topic/vaccinations.html).

Although intervention studies overall provide strong evidence of effectiveness, three important aspects of vaccination requirements have been identified in the broader literature as having the potential to meaningfully influence vaccinations rates and risk for vaccine-preventable disease transmission: 1) geographic clustering of under-immunization, 2) inconsistent enforcement of requirements, and 3) the relative ease of obtaining nonmedical exemptions.

Geographic clustering refers to the presence of meaningful differences in vaccination coverage or nonmedical exemption rates within or across communities. Although exemption status does not always reflect vaccination status, state and community-based studies have shown that nonmedical exemptions tend to cluster geographically (Omer et al., 2006). These associations increase public health concerns about vaccination coverage and risk for outbreaks of VPD.

Enforcement primarily refers to actions enabling or restricting student entry or attendance based on documentation of vaccination, immunization, or exemption. Enforcement typically occurs at the local or school level. Clear and consistent enforcement (which may be combined with education and support activities for parents and the community) maintains the vaccination requirement standard and minimizes confusion and disruption when public health action is required when faced with vaccine-preventable disease in the school or community.

Results from recent studies evaluating associations between nonmedical exemptions and vaccine-preventable disease generally indicate that more stringent exemption requirements are associated with lower exemption rates, greater vaccination coverage, and decreased risk of outbreaks (Wang et al., 2014). The available evidence is subject to limitations in the validity of reported exemption and vaccination rates, and associations of vaccination rates and vaccine-preventable disease incidence with other factors.

Practices suggested in the broader literature to reduce nonmedical exemptions include the following:

- Strengthening the rigor of the nonmedical exemption application process and increasing the frequency of submission (Diekema, 2014)
- Implementing clear and consistent enforcement and monitoring (CDC, 2016)

These efforts should complement ongoing provider outreach and public education to increase demand for vaccinations and access to services, as part of an overall strategy to achieve and maintain high vaccination rates.

Evidence Gaps

Most included studies examined school vaccination requirements; additional evaluations of requirements for child care attendance and college residency would be useful. Studies based on individual vaccination and exemption records, and

data at the county and school level would provide more sensitive assessments of geographic clustering, and allow more definitive comparative assessments of differences in disease risk or incidence. Additional research would be useful to clarify relationships between variations in school or child care documentation and enforcement and vaccination and exemption rates. Information on barriers to school and local enforcement and ways to overcome these barriers would also be useful. Likewise, studies examining factors that facilitate or impede the adoption and enforcement of vaccination requirements in child care and college settings would be helpful. Recent changes in vaccination requirements in several states provide opportunities for timely and important evaluations of impact on vaccination and exemption rates and effects on enrollment. Finally, more research is needed to assess the economic costs and benefits of vaccination requirements in each setting.

References

CDC - National Center for Immunization and Respiratory Diseases. State Vaccination Requirements. Available at URL: http://www.cdc.gov/vaccines/imz-managers/laws/state-reqs.html. Accessed on 2/12/2016.

Diekema DS. Personal belief exemptions from school vaccination requirements. *Annual Review of Public Health* 2014;35:275–92.

Omer SB, Pan WY, Halsey NA, et al. Nonmedical exemptions to school immunization requirements: secular trends and association of state policies with pertussis incidence. *JAMA* 2006;296(14):1757-63.

Seither R, Calhoun K, Knighton CL, et al. Vaccination coverage among children in kindergarten — United States, 2014–15 school year. *MMWR* 2015;64(33);897-904.

Wang E, Clymer J, Davis-Hayes C, Buttenheim A. Nonmedical exemptions from school immunization requirements: a systematic review. *American Journal of Public Health* 2014;104(11):e62-84.

The data presented here are preliminary and are subject to change as the systematic review goes through the scientific peer review process.

Disclaimer

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