State Vaccination Requirements for HPV and Other Vaccines for Adolescents, 1990-2015

Eight years after human papillomavirus (HPV) vaccines were first recommended in the United States, vaccination coverage is substantially below the Healthy People 2020 target of 80%. Data from the US Centers for Disease Control and Prevention (CDC) show that 37.6% of adolescent girls and 13.9% of adolescent boys had completed the 3-dose series in 2013. Recent efforts to address these deficits emphasize that HPV vaccines should not be viewed or treated differently than other routinely recommended vaccines.

School requirements are a mainstay of US vaccination policy, widely used by states to promote high vaccination rates. Depending on the vaccine, requirements may exist for attendance at day care, preschool, kindergarten, or higher grade levels. Attention to their potential value has been largely absent from recent discussions of strategies to improve HPV vaccination rates. However, requirements were extensively discussed following the approval of the first HPV vaccine in 2006. Proponents of vaccination argued at that time that requirements would be premature, explaining that a multi-year implementation period focused on supply, safety, financing, and education is warranted before requiring any new vaccine. We sought to examine the presence and timing of state requirements for vaccines with particular relevance to adolescent health and to compare those findings to the implementation of HPV vaccines.

Methods | Vaccines studied were those used by the CDC to evaluate adolescent vaccination (ie, included in the National Immunization Survey—Teen) that were added to the recommended schedule since 1990 and protected against new disease targets: hepatitis B, varicella, meningococcal conjugate, and HPV. Using legal databases, CDC and other publications, and information from health departments, we identified the earliest date that a requirement, if applicable, took effect for each vaccine in every state and the District of Columbia (DC) for any childhood, adolescent, or college-aged population.

Requirements approved through March 2015 were identified, including those with later effective dates. We calculated the time that elapsed between the publication of the corresponding recommendation of the CDC Advisory Committee on Immunization Practices (ACIP) in the Morbidity and Mortality Weekly Report, formalizing a change to the recommended vaccination schedule, and the effective date of each requirement.

Results | Vaccination requirements (Table) were more common for hepatitis B vaccine (47 states and DC), varicella vaccine (50 states and DC), and meningococcal conjugate vaccine (29 states and DC) than for HPV vaccine (2 states and DC). Through March 2015, only Virginia and DC required HPV vaccination, and each includes broad, vaccine-specific exemption procedures. A third requirement will take effect in Rhode Island in August 2015.

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Publication date of recommendationa</th>
<th>No. of states with requirementsc</th>
<th>Time to requirementd</th>
<th>Largest No. of requirements</th>
<th>No. of states with requirements 8 years after recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>November 1991</td>
<td>48</td>
<td>6 y and 7 mo</td>
<td>1992-2004</td>
<td>37</td>
</tr>
<tr>
<td>Varicella</td>
<td>July 1996</td>
<td>51</td>
<td>6 y and 1 mo</td>
<td>1997-2011</td>
<td>39</td>
</tr>
<tr>
<td>Meningococcal Conjugate</td>
<td>May 2005</td>
<td>30</td>
<td>4 y and 10 mo</td>
<td>2005-2015</td>
<td>22</td>
</tr>
<tr>
<td>Human Papillomavirus</td>
<td>March 2007</td>
<td>3</td>
<td>4 y and 2 mo</td>
<td>2008-2015</td>
<td>2</td>
</tr>
</tbody>
</table>

Abbreviations: ACIP, Advisory Committee on Immunization Practices; CDC, Centers for Disease Control and Prevention.

a Included in the CDC National Immunization Survey—Teen; since 1990, each was added to the routinely recommended vaccination schedule.
b Published in the Morbidity and Mortality Weekly Report.
c The District of Columbia is counted as if it were a state.
d The dates used to calculate the median and year range reflect the earliest date that a state requirement took effect in a state for any childhood, adolescent, or college-aged population and include those approved through March 2015 with later effective dates specified. Requirements that took effect at the start of a school year were treated as taking effect in September of that year.
At the corresponding point in their histories (8 years after publication of a routine ACIP recommendation), hepatitis B vaccine was required in 36 states and DC, varicella vaccine in 38 states and DC, meningococcal conjugate vaccine in 21 states and DC, and HPV vaccine in 1 state and DC.

**Discussion** Vaccination against HPV is currently required in only 2 states, many fewer than another vaccine associated with sexual transmission (hepatitis B) and another primarily recommended for adolescents (meningococcal conjugate). Limitations of this analysis include the lack of differentiation between adolescent-age school requirements for the vaccines studied and requirements for other age groups. Also, historical information regarding requirement timing may have been inaccurately recorded or reported.

Why HPV vaccine requirements have not been more widely implemented is unclear, but may reflect reluctance among states to revisit the contentious political climate surrounding requirement proposals in 2006-2007. The novelty of the 3-dose HPV vaccine series in the adolescent schedule may present additional challenges. The recent approval and recommendation of a 9-valent HPV vaccine offers a new opportunity to consider all strategies shown to promote high vaccination rates, including school requirements.

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**Author Contributions:** Dr Schwartz had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

**Study concept and design:** Schwartz.

**Acquisition, analysis, or interpretation of data:** All authors.

**Drafting of the manuscript:** Schwartz.

**Critical revision of the manuscript for important intellectual content:** All authors.

**Statistical analysis:** Schwartz.

**Administrative, technical, or material support:** Easterling.

**Study supervision:** Schwartz.

**Conflict of Interest Disclosures:** The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.


