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## Print News Coverage of School-Based HPV Vaccine Mandate

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### Abstract

**BACKGROUND**—In 2007, legislation was proposed in 24 states and the District of Columbia for school-based HPV vaccine mandates, and mandates were enacted in Texas, Virginia, and the District of Columbia. Media coverage of these events was extensive, and media messages both reflected and contributed to controversy surrounding these legislative activities. Messages communicated through the media are an important influence on adolescent and parent understanding of school-based vaccine mandates.

**METHODS**—We conducted structured text analysis of newspaper coverage, including quantitative analysis of 169 articles published in mandate jurisdictions from 2005-2009, and qualitative analysis of 63 articles from 2007. Our structured analysis identified topics, key stakeholders and sources, tone, and the presence of conflict. Qualitative thematic analysis identified key messages and issues.

**RESULTS**—Media coverage was often incomplete, providing little context about cervical cancer or screening. Skepticism and autonomy concerns were common. Messages reflected conflict and distrust of government activities, which could negatively impact this and other youth-focused public health initiatives.

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#### Human Subjects Approval Statement

This research involved no human subjects, and was determined by the IRB to be exempt from review.

**CONCLUSIONS**—If school health professionals are aware of the potential issues raised in media coverage of school-based health mandates, they will be more able to convey appropriate health education messages, and promote informed decision-making by parents and students.

### Keywords

Child & Adolescent Health; Chronic Diseases; Community Health; Human Sexuality; Legislation; Policy

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Human papillomavirus (HPV) is a “necessary cause” of cervical cancer, with HPV DNA detected in 95% of cases.<sup>1</sup> HPV infections are common and typically resolve without treatment.<sup>2</sup> Additionally, screening to detect precancerous cells and early treatment can prevent progression to cervical cancer.

However, in 2010 there were 12,200 new cases and 4,210 deaths in the United States. Half of cervical cancer cases report no lifetime Pap test; an additional 10% report no Pap test in five years preceding diagnosis.<sup>3</sup> Hispanic and African American women are more likely to develop cervical cancer; African American women are most likely to die from the disease.<sup>2</sup> In June, 2006 the Food and Drug Administration (FDA) approved Merck’s HPV vaccine Gardasil protecting against four types of HPV: 16 and 18 (causing 70% of cervical cancers, and 6 and 11 (causing 90% of genital warts).<sup>4</sup> The Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination for females age 11-12, and catch-up vaccination from age 13-26, with administration safe for girls age 9 and older.<sup>5</sup> In October, 2009, a second HPV vaccine, Cervarix was approved for females 13 to 26 years old and Gardasil was approved for males 9 to 26 years old.<sup>5</sup>

The prevention benefits of vaccination notwithstanding, there are also many unanswered questions and issues. These include surrounding long term efficacy and adverse effects, moral discomfort with vaccination for an STI, adolescents’ infrequent preventive health care visits, vaccine storage capacity, lack of physician recommendation, and concern with side effects. Furthermore, costs of approximately \$360 per person translate into billions of dollars to vaccinate all school-age females.<sup>6,7</sup>

### Legislative Activity

Most states have legislated strategies to address cervical cancer since 2005, including special task forces, educational campaigns, increased access and funding for screening and/or vaccination, and mandated insurance coverage. The majority of states have also considered school-based HPV vaccine mandates.<sup>8</sup>

For vaccines delivered during childhood or adolescence, school-based mandates have been successful in improving coverage and reducing vaccine-preventable diseases.<sup>9</sup> Middle school mandates have significantly increased hepatitis B and varicella vaccination rates<sup>7</sup> and reduced racial and ethnic disparities in hepatitis B vaccine coverage.<sup>10</sup> For mandates to be effective, parent and physician acceptance is vital.<sup>9</sup> Parental support for compulsory vaccinations is generally high; opposition is associated with vaccine safety and utility concerns, low perceived disease susceptibility, and infringement on parental autonomy.<sup>11,12</sup>

Research on parental acceptance of HPV vaccine mandates is limited; one study found the majority of parents expressed general support for mandates but did not support HPV vaccine mandates.<sup>11</sup>

HPV vaccine mandates have been controversial, raising legal, ethical and social concerns.<sup>13</sup> Most school-mandated vaccinations exist to prevent diseases that are spread through casual rather than intimate contact; cervical cancer is not spread like the measles or pertussis, for example. HPV is not expected to be transmitted in a school setting<sup>14</sup> nor does it “threaten an imminent and significant risk to the health of others.”<sup>13</sup> HPV vaccine mandates are seen by some as expanding the state’s authority and interfering with parental autonomy; doing so without public support creates potential for backlash and distrust of other childhood vaccination programs.<sup>13</sup> Additionally, some argue that targeting only females for vaccination against a STI is unethical.<sup>13,14</sup> On a societal level, compulsory vaccination programs put an economic burden on federal and state governments as well as providers to supply and administer the vaccine.<sup>13</sup> Schools must weigh the educational and social consequences of barring girls who do not complete the full three vaccine series, as well as the administrative burden involved in monitoring compliance.

These concerns have likely limited HPV vaccine mandates to date; nonetheless, a number of states have considered such legislation. In September, 2006 the Michigan Senate proposed a school-based mandate for girls entering 6<sup>th</sup> grade. Ohio introduced similar legislation in late 2006; both bills failed. In 2007, 24 states and the District of Columbia (D.C.) introduced legislation to mandate the HPV vaccine for school attendance.<sup>8</sup> In February, Texas became the first state to enact a HPV vaccine mandate by Executive Order (E.O.), which the legislature later overturned. Virginia and D.C. enacted school-based mandates in 2007. Though other jurisdictions have moved to enact school-based mandates, those bills were withdrawn (California, Maryland).

Texas Governor Rick Perry’s E.O. fueled controversy surrounding HPV vaccine mandates. The E.O. bypassed the state’s legislature and Perry’s authority was questioned; in particular, there was concern about the influence of Merck’s contribution to the governor’s re-election campaign.<sup>14</sup>

## Role of the Media

The news media has tremendous power to influence public knowledge, attitudes, and awareness of health issues, thus influencing behaviors and informing health policy. The media plays a role in agenda-setting, with news impacting what is discussed and known on personal and political levels.<sup>15</sup> The amount of media attention on a topic shapes public perception about the importance of that topic.<sup>15</sup>

The media’s agenda-setting role is understood to influence whether or not the public thinks about an issue. Story and media characteristics may shape the agenda-setting power of a news event. For example, a story evoking negative emotions signals that a problem exists and needs fixing, leading an individual to attach greater importance to that issue.<sup>16</sup> The power of agenda-setting may also be more forceful with stories covered in local outlets, especially when an issue is both local and national.<sup>17</sup>

The influence of the news media goes beyond whether people's attention is drawn to an issue. The way a story is framed also reflects a perspective and influences how people think about an issue.<sup>18</sup> How a story is written, including the language used, sources cited, opinions represented, background information given, and context provided, all influence message framing.<sup>19</sup>

Stories containing background and contextual information contribute to a more “thematic” message frame, which tends to convey there are multiple facets to an issue and that numerous individuals and institutions can play a role in problem solving.<sup>20</sup> Conversely, stories that focus on a specific individual or event without providing context for the issue discussed contribute to an “episodic” message frame. Episodic framing for health issues might focus on individual decision-making, whereas thematic frames might discuss multiple levels—individual, social, environmental, policy. The sources cited in a story also play a role in framing by defining the issue at hand. For instance, government officials as sources signal that the issue is policy driven, whereas quotes from researchers and doctors suggest that readers should look to biomedicine for possible solutions.

Media coverage of vaccines effect parental vaccine decision making, such as uptake of the measles, mumps and rubella (MMR) vaccine.<sup>21</sup> As well, media have been shown to play an important role in communicating about HPV, its link to cervical cancer, and in increasing vaccine awareness.<sup>22</sup> Given that media coverage of controversial vaccine mandates can influence parents' and adolescents' attitudes and beliefs toward vaccination and potential state vaccination policies, it is critical to examine HPV vaccine messages from the context of cervical cancer prevention and control.

Existing research analyzed HPV vaccine media coverage before FDA approval in 2006<sup>23,24</sup> and during approval process,<sup>22</sup> finding that coverage generally failed to capture the complex relationship between HPV infection and cervical cancer. However, previous research has not focused specifically on the presentation of discussions of, and social reactions to, HPV-related legislation. Furthermore, previous research has been limited to quantitative analyses and did not explore contextual characteristics or framing surrounding media messages.

Our study uses a mixed methods approach to examine media coverage of HPV vaccine mandates during 2005-2009. Our first analysis uses a quantitative approach to summarize characteristics of newspaper coverage by the four major newspapers in states that enacted HPV vaccine mandates (Texas, Virginia, D.C.), regardless of mechanism (E.O., legislation) or implementation. The second analysis qualitatively explores message framing around vaccine mandates in a subset of articles from 2007. Based on the literature, we explore certain characteristics of thematic message frames, such as the presence of background and contextual information about HPV, cervical cancer, and the vaccine. Message characteristics and frames are compared between newspapers to theorize how varying media coverage by location might influence different legislative activities and possibly outcomes.

Despite substantial growth of other types of media, including television and the Internet, print news reporting continues to serve as the original source for much of what is reported later in other media, and influencing a wider audience than just newspaper readers. Thus, it

offers a valid “snapshot” of the news environment on any given issue. In addition to news reports or “hard” news stories, we analyze letters to the editor and opinion/editorial articles, as these have been demonstrated to reflect important elements of the discourse on a given topic.<sup>25</sup>

## METHODS

### Sample

Using LexisNexis Academic, we captured articles from The Washington Post, The Houston Chronicle, The Virginian Pilot, and *The Richmond Times Dispatch* using “HPV” or “cervical cancer” (in headline/lead paragraph) and “vaccine” (anywhere in text), published from 6/1/2005-5/31/2009, a time window purposefully selected to capture coverage during vaccine development, pre- and post-approval, and during widespread consideration of policies for recommendation and uptake). Inclusion criteria were one or more mentions of the vaccine plus information on cervical cancer, screening, HPV vaccination, legislation, or STIs, excluding articles focusing on other topics with minor vaccine mentions (e.g. development of a HIV or breast cancer vaccine; list of new drugs available without further discussion of the vaccine; corporate or financial news with vaccine mention).

### Data Analysis

Coding categories were developed through an iterative process. Articles were reviewed to draw lists of key terms and concepts, which were then grouped into topic categories for structured coding. Six main topic areas emerged: ethical issues (e.g. autonomy, girls-only mandate), HPV/vaccine/cervical cancer characteristics (e.g. infection rates, vaccine efficacy), government/state activities (e.g. FDA approval, legislation), health behaviors (e.g. abstinence, condom use, promiscuity), stakeholder actions/interests (e.g. insurance companies, vaccine manufacturers, physicians), and social reactions/attitudes/influences (e.g. parental opinions, physician recommendation). We then developed specific codes for content within each thematic area, with a total of 91 unique variables captured.

Up to two primary topics were identified and coded for each story. Topics were identified as primary or main foci of articles based on established criteria—following journalistic convention of structuring stories with the content deemed most critical appearing in the beginning of the story—including article title, prominence of the topic in introductory paragraphs, and proportion of text used for the topic. Identification of main topic(s) indicates the messages most likely conveyed to the reader. Content analyses often focus on choosing one main theme,<sup>26,27</sup> but we allowed for up to one additional theme to be comprehensive. More than two themes begins to dilute the concept of a “main” topic, and in relatively brief articles, there is limited content on more than two topics. Additional variables included publication date, newspaper, and type of article (news, opinion/editorial), as well as event prompting publication, sources, story tone/opinion, and conflict (Tables 1, 2). “Tone” captured how readers might perceive HPV-related messages, with “positive” stories describing immunization benefits or scientific advancement, “negative” tone emphasizing barriers, risks, or controversy, and “mixed” tone stories discussing, for example,

immunization benefits and criticism of mandates. “Conflict” codes identified descriptions of competing viewpoints, tension, and lack of consensus.

Reliability was established through multiple rounds of group coding, discussion, and refinement of coding schema and rules. After establishing reliability through group coding, two team members coded all articles. We calculated code frequencies overall and by newspaper, using STATA, version 9.0. Inter-coder reliability for three key constructs (tone, presence of conflict and topic) was calculated with a kappa statistic, using a 5% double-coded sample. For tone, conflict, and topic, kappa was 0.66, 0.69, and 0.86, respectively, exceeding the standard of 0.60, indicating substantial inter-coder agreement.<sup>28</sup>

The content analysis used a priori categories. An additional, exploratory analysis was performed on a subset of particularly key articles that contained mentions of both legislative activity and vaccine mandates. All articles containing both types of mentions were automatically included in the qualitative sample and the qualitative analysis employed both open and axial coding. Using Atlas.ti, version 6, we created data matrices to compare presence of background and contextual information, sources and opinions represented, article tone, and common emerging themes.

## RESULTS

### Structured Content Analysis (Tables 1 and 2)

Overall, 169 articles were analyzed, with 65% published in 2007. Government and state activities (69%) and HPV/cervical cancer/vaccine characteristics (57%) were the most common topics. Most articles had mixed (44%) or positive (41%) tone. Legislative activity prompted 40% of articles; 96% of these were from 2007. State and local government representatives were the most commonly cited sources (40% of all articles). Conflict was present in 76% of stories, and 73% addressed vaccine mandates.

### Qualitative Analysis

All articles that mentioned both vaccine mandates and legislative activities were included for in-depth analysis, consisting of 45 news and 18 opinion (editorials/readers' commentary) articles. Key thematic message characteristics that provided context to policy discussions included cervical cancer morbidity and mortality, cervical cancer burden versus other cancers, HPV vaccination versus other vaccinations, cancer prevention through screening, racial/ethnic/regional or income disparities related to cancer, HPV characteristics (infection/clearance rates, progression to disease), and legislative activities in other states. Additional themes that emerged during qualitative analysis were distrust and parental autonomy.

**Background and Context**—Nineteen news and two opinion articles provided no background/context. News coverage tended to include background about cervical cancer morbidity/mortality (15/45), income disparities related to cancer or access to care (16/45), HPV vaccination versus other vaccines (14/45), racial/ethnic/regional disparities in cervical cancer (10/45), or HPV infection/clearance/progression to cancer (9/45). Vaccination and cancer prevention were rarely discussed in a screening context (2/45) and cervical cancer

was never compared to other cancers. Legislative activity in other states was the most common thematic characteristic in news articles (23/45).

Opinion articles most commonly discussed the HPV vaccine compared to other vaccinations (10/18), cervical cancer burden (8/18), and legislative activities in other states (5/18). Less commonly mentioned were disparities (income and health disparities each appeared in 4/18 stories), cancer screening (3/18), and HPV infection (2/18). No opinion articles compared cervical cancer burden to other diseases.

Pap testing was rarely mentioned (5/63 articles) as an alternative to vaccination. However, in one article, D.C. City Council members argued that vaccination could not replace Pap testing, stating “We should focus special attention on promoting the Pap test among our immigrant women, who frequently come from countries with high rates of cervical cancer and poor access to health care.”<sup>29</sup> This overlooks low rates of screening among all women who develop cervical cancers, and improved access to screening as an alternative to mandates.

**Coverage by Location (Table 3)**—Mandate coverage in the two Virginia newspapers always contained contextual information while 6/28 *Post* stories and 15/21 *Chronicle* stories lacked contextual message characteristics.

*The Post* more frequently discussed health or income disparities (82% of articles) than *The Chronicle* (33%) or the Virginia papers (29%). *The Post* noted higher rates of cervical cancer in Washington D.C., especially among African American women, often linking this to income disparities (7/9). *The Chronicle* rarely noted higher rates of cervical cancer in Texas than the rest of the nation (2/21).

Few articles discussed that mandates can decrease disparities by improving access to care. One *Post* editorial stated: “It stands to reason that, without a mandatory vaccination, many of the girls who don’t get vaccinated will belong to the same groups that fall through the cracks of the patchy U.S. health-care system.”<sup>30</sup> However, funding for mandated vaccinations was, however, discussed in every newspaper.

Coverage in *The Chronicle* was more likely to focus on a specific event, without background or context. *The Post* generally provided more public health related background and more frequently discussed HPV related legislative activities in other states (71%) compared to *The Chronicle* (24%) or the VA papers (21%) Sources Cited & Mandate Position (Table 4)

Advocacy groups, when mentioned, were generally opposed to mandates, especially those cited in *The Chronicle*. State government representatives were more often cited. *The Post* cited government representatives in 13/28 articles; favorable opinions received more attention. Articles in the VA papers often represented opinions of government officials (9/14) and, again were more likely to reflect support of mandates. Generally, *The Chronicle* was most likely to include state government representatives as sources (16/21), and they were more likely to reflect opposition to mandates.

**Distrust**—In addition to thematic message characteristics, we explored two message frames that emerged during qualitative analysis. Feelings of distrust and skepticism were relatively prevalent (33/63). Distrust was linked to government representatives accused of receiving campaign contributions from Merck. In particular, Merck’s contribution to VA political campaigns was of interest; one editorial in *The Dispatch* stated: “legislators across the board were urged to quickly hop on the Gardasil train—one that was barreling down a track generously greased with Merck’s lobbying dollars.”<sup>31</sup> Merck was frequently criticized for its lobbying activities, with pro-mandate motivation framed as profit, not public health. However, while most articles implied skepticism of Merck’s vaccine push, one reported, “It is one of those moments in the public discourse, say several advocates for the mandatory vaccine, in which the interests of a deep-pocketed private company converge with the public good.”<sup>32</sup>

Articles reflected concerns that distrust could negatively impact other vaccination programs, for example, if opt-out provisions in HPV vaccine legislation encouraged parents to opt-out of vaccines for other, more communicable diseases. One source asked “Are we going to be creating a culture of vaccine refusal that’s not going to serve us well?”<sup>33</sup>

HPV vaccine mandates were sometimes discussed in conjunction with historical injustice or experimentation (9/63 articles). *The Post* included comparisons of HPV vaccines to the Tuskegee Syphilis Study.<sup>30,34,35</sup> Another *Post* story reported a D.C. council member’s comments, and public response: “To scattered applause from listeners in the council chambers, she urged that ‘an experimentation’ not be allowed on children.”<sup>36</sup> A VA opinion article likened HPV vaccine mandates to fictional government mandated euthanasia for the elderly; and in *Washington Post* opinion articles, to Norplant birth control experiments among incarcerated African American women, and side effects resulting from the use of diethylstilbestrol (DES).

The undercurrent of racism reflected in discussions of the Tuskegee and Norplant studies was made explicit by *Post* columnist Courtland Milloy. He suggested that the HPV vaccine mandate in D.C. was racist by targeting girls in a “predominantly black school system.”<sup>35</sup> He sarcastically defended D.C.’s “paternalistic government” for mandating a vaccine against an STI: “After all, your daughter is 11 and probably black, so the assumption is she’ll be having unprotected sex in no time—but don’t take offense.”<sup>35</sup> In counterpoint, one woman defended the proposed legislation based on the District’s higher cervical cancer rates and disproportionate burden among African American women, writing “I consider it racist for women of color to die in higher rates from a preventable disease.”<sup>37</sup>

In another commentary, Milloy suggested improved health education and access to health care as a mandate alternative, but continued to reference racism/slavery, calling the government an “antebellum massa” and stating “too many of us are content to live and die as slaves.”<sup>38</sup> Responses to Milloy continued to address vaccine mandates in the context of racism and the Tuskegee study, but some refuted allegations of racism since a vaccine mandate would cover all girls regardless of income or race/ethnicity,<sup>30,34</sup> or countered that Milloy’s “language dishonors the memory of those who truly lived, suffered and died as slaves.”<sup>39</sup>



**Ethics—Parental Autonomy**—The most prevalent theme that emerged in qualitative analysis was government intrusion on parental autonomy. Over half of news articles (23/45) and over 60% (11/18) of opinion articles mentioned autonomy. Journalists tended to present two contrasting perspectives on compulsory vaccination; namely, is the mandate “an intrusion or life-saving breakthrough?”<sup>40</sup> Journalists reported concerns the legislation “erodes,” “infringes on,” “usurps,” or “undermines” parental autonomy, and conversely, that opt-out provisions provided “balance” between parents’ rights and government authority. Opinions stressing that parents should be the decisionmakers for their daughters were common. Parental autonomy and sexual transmission concerns were often listed together as reasons people opposed vaccine mandates (Box 1).

The quotes in Box 1 give equal weight to objections based on sexual activity and parental autonomy. Only one article attempted to qualify the prevalence of these concerns:

“Some people argue that vaccination could encourage adolescents to be more promiscuous. More believe that parents’ authority over their daughters’ health care would be usurped.”<sup>33</sup>

Discussion of parental autonomy in conjunction with sexual activity concerns may misrepresent how common these views actually are and serve to normalize the idea that vaccination leads to promiscuity.

Other commentary reflected views that the government should not try to usurp parental authority. One opinion reflected tension around the sexually transmitted nature of HPV and legislative ties to the pharmaceutical company. See Box 2 for examples reflecting government intrusion on parental autonomy.

Ethical concerns in such opinion pieces centered on parental autonomy and government paternalism; few objections were presented on the basis that mandates apply only to girls (4/63). A few articles (4/63) supported mandates claiming a moral obligation to protect girls from cancer.

## DISCUSSION

Most articles in the four papers were published in 2007, the year in which HPV vaccine mandates were introduced in Texas, Virginia, and the District; most articles (73%) specifically mentioned vaccine mandates. This suggests that HPV-related legislation prompted an increase in media attention, consistent with findings that government/state activity was the most popular article topic, legislative activities the most popular event prompting coverage, and state/local government representatives the most heavily relied upon sources in this sample of articles. The presence of conflict in 76% of articles suggests that legislative activities prompted strong social reactions, or at a minimum, that conflict made the legislative activity newsworthy. Media coverage of controversial topics can create public uncertainty,<sup>45</sup> and when focused on vaccines, those messages can erode parents’ trust in immunization.<sup>21</sup>

Earlier quantitative studies demonstrated the incomplete nature of HPV vaccine media coverage, which failed to communicate public health messages for optimal cervical cancer

control, such as the complex relationship between HPV infection and cervical cancer<sup>23,24</sup> and continued need for cancer screening after vaccination.<sup>22</sup> Our qualitative findings demonstrate that this earlier lack of context persisted. Failure to contextualize newsworthy legislative events may misrepresent cervical cancer in the U.S., thus impacting how people consider problems and solutions around HPV infection and cancer prevention. Specifically, discussing HPV prevalence and potential vaccine mandates without adequate context may lead to conclusions that vaccine mandates are vital to cancer prevention.

Most articles provided some background on HPV related legislative activities, the burden of cervical cancer/HPV, or Merck's role in shaping vaccine policy. Generally, providing background and social context surrounding a problem leads individuals to consider the role of government or institutions in solving that problem.<sup>20</sup> Here, government was more often framed as a problem, for intruding on parental autonomy and/or passing legislation motivated by profit, and suggested solutions were government inaction and parental responsibility for health decisions. Sexuality concerns were often tied to autonomy discussions, again framing policy and family as competing, rather than complementary, public health strategies. However, when messages were framed with problematically high rates of HPV infection or cancer disparities, solutions supported vaccine mandates or government action to improve vaccine access.

Additional lack of context may have served to exaggerate pervasiveness of parental concerns about vaccination and promiscuity. Evidence shows that this concern is relatively rare among parents; a review of 28 studies from 1995-2007 found only 6-12% of parents worried the vaccine would promote sexual behavior.<sup>46</sup> When reporting a story, journalists tended to present opposing viewpoints without qualifying how typical those views are.<sup>47</sup> Incomplete characterization of sexual activity concerns may inflate public perception about the issue's salience.

*The Houston Chronicle* published more articles lacking background/contextual information than the other papers. Such articles focused on specific legislative activities, reflecting greater newsworthiness of the Governor's exercise of power than cancer prevention. The advocacy groups and local government representatives cited in *The Chronicle* reflected largely negative views toward a vaccine mandate. Had HPV vaccine mandates followed the more usual legislative path (originating in the TX legislature) perhaps media messages would have reflected more thematic characteristics and more engagement with the potential benefits and drawbacks of a vaccine mandate.

*The Washington Post* is a 'local' paper to three separate legislative jurisdictions: Washington D.C., VA and MD. This perhaps explains why *The Post* had the most articles addressing legislative activities in other states (20/63). Media coverage of three jurisdictions ruled by separate legislative bodies likely necessitated more background of HPV-related legislative activities. *The Post* cited mostly opinions of local government representatives in D.C., VA, and MD, and these opinions were generally favorable toward vaccine mandates.

News coverage in the two VA papers generally contained key background and contextual characteristics and was positive or mixed in tone. Most local government representatives

cited were in favor of HPV vaccine mandates but most opinion pieces reflected negative feelings toward mandates. In February 2010 the VA legislature considered a bill to eliminate the HPV vaccine mandate, but it never left committee.<sup>8</sup>

## Limitations

While this study provided a more in-depth analysis of HPV vaccine media messages compared to previously conducted quantitative studies, results must be interpreted carefully. We used a purposive sample of news articles focused on HPV vaccine mandates rather than articles where the vaccine was mentioned within a broader scope of topics. More inclusive search terms were tested and did not return additional relevant articles. Yet, it is possible that articles not included in analyses provided more thematic message characteristics. However, articles specifically addressing HPV vaccine legislation often failed to present a complete picture of cervical cancer morbidity and mortality in the U.S. or strategies for the prevention and early detection of the disease. From a public health perspective, this represents a missed opportunity to inform the public about cervical cancer prevention through screening.

*The Washington Post* most fully communicated public health context by discussing background and contextual information and health disparities around cervical cancer. The *Post* was also more likely to cite government representatives who defended vaccine mandates. Washington D.C. had the second to largest increase (about 20%) in HPV vaccine coverage, measured by at least one dose among females aged 13-17, between 2008 and 2009 (after Hawaii).<sup>48</sup> Texas had a 5% increase and Virginia was one of only 4 states to have a decrease in coverage (about 4%). In 2009, Washington D.C. ranked among the top quartile of states for HPV vaccine uptake (60%); Virginia and Texas were among the bottom quartile (37% and 38% respectively).<sup>48</sup> We cannot make causal conclusions, but it is possible that the controversy caused by vaccine mandates and reflected in the media had a highly negative impact on vaccine uptake in two of the three mandate jurisdictions. Generally, states that legislated state funding or insurance coverage of the HPV vaccine—such as Rhode Island, South Dakota, Oregon, Arizona, Colorado, California, North Dakota, and Maine—had above average rates of state HPV vaccine coverage (exceptions include Illinois, Nevada and Iowa).<sup>8</sup> This suggests that HPV vaccine mandates were not the only way to increase vaccine uptake, and that media coverage of mandates may in fact create backlash to government-sponsored public health programs. These findings are supported by complimentary work by Colgrove<sup>49</sup> and Mello,<sup>50</sup> who conducted key informant interviews with state-level policy makers about HPV vaccine mandate experiences.

## Conclusions

Distrust of government has historically fueled opposition to state mandated vaccination.<sup>14</sup> The news stories reviewed here reflected skepticism of government ties to Merck, who aggressively lobbied for vaccine mandates. There were also references to historical injustices breeding skepticism that the government was acting in the best interest of the public. Such distrust could also be detrimental to public health initiatives and future scientific advancements, especially vaccine research and development. Controversial topics and novel approaches to disease prevention are newsworthy, but the lack of focus on

screening and context around cancer disparities may also be detrimental to the overall goal of reducing cervical cancer. Continued education, awareness, and resources are necessary to increase utilization of screening services, particularly among underserved populations in the U.S.

Literature on parental acceptance of the HPV vaccine show it is generally viewed favorably, but a vaccine mandate that challenges parental autonomy was clearly a source of controversy in this sample of articles. Controversial messages regarding mandates may negatively impact acceptance among undecided groups, undermining the vaccine's efficacy and potential to decrease disease. Furthermore, distrust of HPV vaccination could create negative feelings toward other vaccination programs,<sup>20</sup> potentially causing an increase in vaccine preventable diseases.

## IMPLICATIONS FOR SCHOOL HEALTH

The media has a powerful influence on parents and adolescents, and it is vital that school health professionals understand what health messages are communicated to the public, particularly on potentially controversial issues. This research suggests that substantial public education is an important prerequisite to legislation on school-based vaccination mandates. School health professionals can play an important role in assisting parents and adolescents to make informed decisions regarding new preventive health recommendations,<sup>51,52</sup> and also by promoting messages for media use that emphasize areas of consensus rather than controversy, regarding new health products and policies.

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**Box 1****Parental Autonomy Linked to Sexual Transmission Concerns**

“...some groups and parents fear that such requirements can infringe on parental rights and unintentionally encourage sexual activity.”<sup>29</sup>

“...the mandate makes sex seem permissible and that parents should be the ones to decide whether to immunize their daughters.”<sup>41</sup>

“...mandating the HPV vaccine...has engaged critics who believe requiring a vaccine against a sexually transmitted disease would undermine parental authority and also encourage promiscuity.”<sup>32</sup>

**Box 2****Excerpts from Opinion Articles in VA Newspapers Reflect Government Intrusion on Parental Autonomy**

“Asking the government to do a parent’s job is not going to keep girls from getting sexually transmitted diseases.”<sup>42</sup>

“...in navigating the complex, emotional currents of sexual relations, parents should be holding the oars, not lawmakers. Conversations should begin at home.”<sup>43</sup>

“Let the parents of little girls decide what is best for them, not some lawmaker who is being supported by drug money.”<sup>44</sup>



**Table 1**

Descriptive Results (%) by Newspaper

Variable	Papers in States with HPV Vaccine Mandate					
	Total N=169	%	The Washington Post N=67	The Houston Chronicle N=62	The Virginian Pilot N=29	The Richmond Times Dispatch N=11
<b>ARTICLE TOPIC</b> (up to 2/article)						
Government/State Activities	116	69	64	76	55	91
HPV/Vaccine Characteristics	97	57	55	48	72	82
Social Influences/Reactions/ Attitudes	51	30	33	37	21	0
Stakeholders	35	21	21	21	21	18
Ethical Issues	17	10	13	6	14	0
Behaviors	16	9	10	8	10	9
<b>YEAR</b>						
2005-2006	35	21	30	15	10	27
2007	110	65	61	71	62	64
2008-2009	24	14	9	14	28	9
<b>STONE</b> (1/article)						
Mixed	74	44	37	55	31	55
Mostly positive	69	41	46	34	45	36
Mostly negative	18	10	8	11	17	9
Neutral	8	5	9	0	7	0
<b>EVENT prompting publication</b> (1/article)						
Research/scientific advancement	41	24	19	24	41	9
Legislative activities	67	40	42	39	35	46
Government action/regulatory body	27	16	13	22	0	36
Other stakeholder action	17	10	12	10	7	9
Other event	6	3.5	2	5	7	0
No event evident	5	3	6	0	3	0
Opinion/editorial	6	3.5	6	0	7	0
<b>CONFLICT</b> present						
Vaccine mandate mention	128	76	67	92	62	73
Vaccine mandate mention	123	73	70	79	59	91

**Table 2**Descriptive Results of Sources Cited (in at least 5% of articles<sup>\*</sup>) by Paper

Variable	Total (N=169)	%	The Washington Post N=67	The Houston Chronicle N=62	The Virginian Pilot N=29	The Richmond Times Dispatch N=11
<b>SOURCE (choose all that apply)</b>						
State/local government rep	67	40	31	55	21	55
Researcher/professor	46	27	24	23	48	18
Provider (including med student)	45	27	18	29	38	36
Parent	27	16	16	18	17	0
Pharmaceutical rep	25	15	15	16	17	0
Federal government rep (e.g. CDC)	21	12	12	11	10	27
No source cited	21	12	13	5	2	1
Pro-family/social conservative group rep	10	6	5	4	1	0

\* The following sources were cited in less than 5% of articles: vaccine consumer (potential or actual), cancer patient/survivor, insurance company representative, anti-vaccination group representative, libertarian/parents rights group representative

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**Table 3**

Results of Qualitative Analysis: Characteristics of News Stories

N=63	Washington Post (N=28)		Houston Chronicle (N=21)	VA Pilot & Richmond Times (N=14)	
	NEWS (N=18)	OPINION (N=10)	NEWS (N=21)	NEWS (N=6)	OPINION (N=8)
<b>Key Message Characteristics</b>					
Focus on specific event, no background (N=21)	4	2	15		
CC Morbidity or mortality rates (N=23)	11	4	3	1	4
Burden of HPV infection (N=11)	6	2	1	2	
Cancer or vaccine context (N=24)	7	7	4	3	3
Cancer Screening (N=5)		2	2		1
Income disparities (N=20)	8	3	5	3	1
Racial/ethnic/regional disparities (N=14)	8	4	2		
Legislative activity in other states (N=28)	15	5	5	3	
<b>Distrust (N=33)</b>					
Government ties/ Merck lobbying (N=24)	7	2	9	2	4
Historical injustice/ experiments (N=9)	2	6	1		
<b>Ethics (N=37)</b>					
Parental autonomy (N=34)	14	5	7	2	6
Moral obligation (N=5)	1	2	2		
Girls only (N=4)		1	2	1	

**Table 4**

Qualitative Analysis: Advocacy and Government Representatives Cited for Position on HPV Vaccine Mandate

Newspaper	Sources: Advocacy Groups	Position on Vaccine Mandate (number of mentions if >1)
The Washington Post	Parents and Citizens Committee to Stop Medial Experimentation in D.C.	Against
	Parents United for D.C. Public Schools	Against
	National Vaccine Information Center	Against (2)
	Child Health Advocacy Institution at Children’s Hospital	Against
	Focus on the Family	Against
	The Balm In Gilead Inc.	For (2)
	Maryland State Medical Society	For
	Women In Government	Funded by Merck (2)
	Maryland State Teachers Association	No Stance
The Houston Chronicle	Texas Eagle Forum	Against
	Public Citizen	Against
	Texas Physician Resource Council	Against
	Parents Requesting Open Vaccine Education	Against
	Texas Medical Association	Against
	Women in Government	Funded by Merck
The Virginian Pilot	National Vaccine Information Center	Against
	Family Foundation	No stance
<b>Sources: State Government Representatives</b>		
The Washington Post	D.C. Council Member	Against 3
		For 7
	VA Governor	For 1
	MD Senate Delegate	For 5
	KT House Representative	For 1
The Houston Chronicle	TX Governor	For 1
	TX Lieutenant Governor	Against 1

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Newspaper	Sources: Advocacy Groups	Position on Vaccine Mandate (number of mentions if >1)	
	TX Senator	Against	4
		For	2
	TX House Representative	Against	12
		For	4
	TX former government representative	For	1
Richmond Times Dispatch & The Virginian Pilot	VA Governor	Undecided	1
		For	1
	VA Senate Delegate	Against	2
		For	6

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