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## Discussions of Adolescent Sexuality in News Media Coverage of the HPV Vaccine

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### Abstract

Given the sexually transmitted nature of human papillomavirus (HPV), some worry the HPV vaccine will create a false sense of security and promote adolescent sexual activity. Media coverage of vaccines can influence social norms, parental attitudes, and vaccine acceptance; in this paper we examine U.S. news media messages related to sexuality and HPV vaccination. Drawing on a structured analysis of 447 articles published during 2005-2009, we qualitatively analyzed a purposive sample of 49 articles discussing adolescent health behaviors related to HPV vaccination. Commonly, articles discussed vaccination in the context of abstinence-only versus comprehensive sexual health education; cited research findings to support vaccination or sex education; argued against connecting vaccination to promiscuous behavior; but included fear-inducing messages. Media messages concerning health behaviors related to HPV vaccination tended to support government and parental involvement in sex education, and dismiss concerns linking vaccination to sexual activity, while also presenting the vaccine as lifesaving.

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## Keywords

health communication; news media; vaccination; sexual activity

In June, 2006 the Food and Drug Administration (FDA) approved Merck's Human Papillomavirus (HPV) vaccine Gardasil. The quadrivalent vaccine protects against four types of HPV: types HPV-16 and HPV-18, which cause 70% of cervical cancers, and HPV-6 and HPV-11, which cause 90% of genital warts (Centers for Disease Control and Prevention [CDC], 2007). The Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination for females aged 11 to 12 years and catch-up vaccination for females aged 13 to 26 years (CDC, 2007). In 2009, a second HPV vaccine, Cervarix, was approved for females 10 to 25 years. Also in 2009, Gardasil was approved for boys aged nine to 26 years to reduce genital warts, but the ACIP does not recommend routine vaccination among males (CDC, 2010).

## Sexual Transmission

HPV is the most common sexually transmitted infection (STI) in the U.S. Over six million people become infected every year, but most HPV infections resolve without treatment (CDC, 2010). The sexual transmission of HPV provokes controversial discussions about vaccination. Parents voice concerns that vaccination will increase the likelihood of sexual activity or promote promiscuity (Zimet, Liddon, Rosenthal, Lazcano-Ponce & Allen, 2006). Physicians report barriers to vaccine recommendation based on perceptions of patients' HPV risk, perceptions of parental approval, concern with the age of vaccination, and concern with discussions of sexuality (Daley et al., 2006; Kahn et al., 2007). Despite barriers, however, many parents show support for the vaccine (Constantine & Jerman, 2007; Horn, Howard, Waller & Ferris, 2010; Rosenthal et al., 2008; Stretch et al., 2008). Vaccine acceptance is associated with beliefs of susceptibility to HPV or cervical cancer, vaccine efficacy and provider recommendation (Dempsey, Zimet, Davis & Koutsky, 2006; Gerend, Lee & Shepherd, 2007; Kahn, 2009).

The research literature suggests only a small minority of parents are concerned that the vaccine might encourage sexual activity (Constantine & Jerman, 2007; Rosenthal et al., 2008; Stretch et al., 2008). Nonetheless, there seems to be a perception that sexual transmission is a key issue, heightening sensitivity in the debate over HPV vaccination. The extent to which sexual transmission of HPV has influenced vaccine uptake is currently unclear.

## Adolescents and Sexuality

As stated in the World Health Organization (2006) report on HPV vaccination, "The HPV vaccines will bring national immunization programmes to the sociopolitically charged environment of sexual health, sexuality and sexually transmitted infections among young adolescent girls and possibly boys" (p. 6). Bringing the HPV vaccine discussion into the realm of "sexual politics" has led to vaccine opposition among many conservatives who aim to protect women and children "from physical *and moral* harm by containing their sexuality"

(Casper & Carpenter, 2008, p. 894). Tensions surrounding sexual activity and sexuality are longstanding in American society and sex education policy has been a “chief battle site” (Casper & Carpenter, 2008, p. 892). Many professional health organizations including the American Public Health Association, the American Academy of Pediatrics, and the American Medical Association, support comprehensive sexual health education, which would include HPV education and prevention (as opposed to abstinence only education) (Ott & Santelli, 2007). The concern of some parents that sex education could encourage adolescents to engage in sexual activity (Guilamo-Ramos, Jaccard, Dittus & Collins, 2008) does not appear to be borne out by research (Kohler, Manhart & Lafferty, 2008). Parents also express concerns that the HPV vaccine would encourage sexual activity by removing fear of contracting the disease. However, fear of STIs has not been found to be a major reason for abstinence among adolescents (Abma, Martinez, Mosher & Dawson, 2004).

## Role of the Media

The media play an important role communicating information about HPV and its link to cervical cancer as well as increasing vaccine awareness (Kelly, Leader, Mittermaier, Hornik & Cappella, 2009). Media coverage of vaccination issues can affect parental vaccine decision making and vaccine update. In Wales, for example, before an anti-measles, mumps and rubella (MMR) vaccine campaign in a local paper, MMR uptake in the newspaper’s distribution area was almost two percent higher than the rest of Wales; after the start of the anti-vaccination campaign, MMR uptake was almost nine and a half percent lower than the rest of the country (Mason & Donnelly, 2000).

Analysis of news media coverage of the HPV vaccine has generally focused on the time period around approval, exploring media messages about characteristics of the vaccine and cervical cancer. Two studies analyzed print news before FDA approval of the vaccine in 2006 (Anhang, Stryker, Wright & Goldie, 2004; Calloway, Jorgensen, Saraiya & Tsui, 2006); a third examined news stories six months before and after FDA approval (Kelly, Leader, Mittermaier, Hornik & Cappella, 2009); and a fourth examined online news stories three months after approval (Habel, Liddon & Stryker, 2009). Authors demonstrated that media coverage of HPV is often incomplete, failing to communicate the complex relationship between HPV infection and cervical cancer or the need for continued cancer screening after vaccination (Anhang et al., 2004; Calloway et al., 2006; Kelly et al., 2009). Investigators also demonstrated an association between heavy exposure to health-related news media and HPV knowledge (Kelly et al., 2009). One content analysis of 250 online stories revealed that the most common social concerns mentioned in the three months after vaccine approval were vaccine affordability (49%), increase in sexual risk factors (38%), and mandatory school vaccination (32%) (Habel et al., 2009). The majority of news coverage in the 19 months after FDA approval (June 2006-December 2007) continued to lack detailed information about HPV and the vaccine; and about 30% of the 547 articles analyzed mentioned sexual morality concerns tied to vaccination (Johnson, Sionean & Scott, 2011).

Other researchers specifically explored risk messages about HPV, cervical cancer, and the vaccine in U.S. and Canadian published newspapers and news magazines from January 2006 to December 2007 (Abdelmutti & Hoffman-Goetz, 2009; Abdelmutti & Hoffman-Goetz,

2010). After a review of 164 newspaper articles and 15 news magazine articles, authors found that risk messages often focused on the threat of illness or death caused by HPV and cervical cancer. HPV was also described as inescapable or pervasive in the population. These messages can induce fear and heighten the public's perception of cancer risk. Finally, investigators reported that 40% of U.S. and 60% of Canadian newspaper articles, and 44% of news magazine articles referenced promiscuity and changes in sexuality around HPV vaccination (Abdelmutti & Hoffman-Goetz, 2009; Abdelmutti & Hoffman-Goetz, 2010).

The HPV vaccine has also been available in Canada since 2006, and publicly funded school-based vaccination programs were implemented in all provinces and territories between 2007 and 2009. Despite public funding and availability, three-dose vaccine coverage varied widely after the first year of program implementation, with up to 85% coverage in the Atlantic provinces but only 51% in Ontario (CDC, 2011). Rates in the U.S. are lower still; only 32% of females aged 13-17 had the three-dose series by 2010.

Vaccination coverage of eligible females aged 12-13 in England in 2009-2010 was relatively high at over 76%, despite an almost four percent decline in coverage compared to the previous year. The Department of Health speculated that adverse media publicity about a girl who died shortly after vaccination in September 2009 contributed to the decline (Sheridan & White, 2010). Two research studies conducted in the U.K. specifically examined newspaper coverage of HPV vaccination and sexual activity. In one study, almost two-thirds of the stories mentioned that the vaccine might encourage risky sexual behaviors whereas only a quarter of stories contained counterarguments to such claims (Forster, Wardle, Stephenson & Waller, 2010). Investigators concluded that these frequently reported concerns could shape normative beliefs and negatively impact parental acceptance (Forster et al., 2010). Another UK study concluded it was common for articles to discuss the sexual behaviors of women but not men, and criticism of the vaccine from a promiscuity angle often reflected opinions of religious groups, whose views were in "juxtaposition to those of scientists, parents and journalists" (Hilton, Hunt, Langan, Bedford & Petticrew, 2010, p. 949).

Differing aspects of vaccination policies in the U.S., Canada and the U.K. may modify the media's influence on vaccine uptake across these countries. While media coverage likely plays a role in parental decision making in all three, it may have a greater impact in the U.S., where parents must seek out the vaccine for their daughters, as opposed to Canada and the U.K., where routine immunization programs are offered and paid for through nationalized health systems.

However, given the media's potential influence, it is critical to examine how messages around cancer prevention and control are communicated. Previous studies conducted in the U.S. have not fully explored the framing of news stories which discuss sexual behaviors in the context of HPV vaccination. Message framing can not only influence how we think about a problem, but also how we attribute responsibility for the problem and thus, feasible solutions (Iyengar, 1991). Adolescent sexuality is a sensitive topic; and media coverage of sexual behaviors related to the HPV vaccine can influence readers' attitudes and beliefs toward vaccination, especially parental acceptance and uptake of vaccine for their daughters.

## Study Aims

This study explored news media discussions of sexuality and sexual activity as a component of health behaviors related to HPV vaccination. We examined messages that contribute to the social discourse around vaccination and may therefore contribute to vaccine decision making. This included HPV-related messages discussed in conjunction with other topics, such as sex education, that may heighten perceptions of controversy surrounding vaccination.

## Method

This work is part of a larger analysis of HPV vaccine news media messages (blinded for review), including analyses specifically focusing on school-based vaccination mandates (blinded for review). Three databases (LexisNexis Academic, NewsBank, and ProQuest) and the azcentral.com archives were used to search the top ten circulating U.S. daily newspapers (BurrellesLuce, 2009) and three regional newspapers for articles published in a four year timeframe (June 1, 2005 to May 31, 2009). The selected 10 papers are circulated to over nine million people each day and account for nearly 20% of the total paid circulation of daily newspapers in the U.S. (Rosenstiel & Mitchell, 2011). In addition, many of the stories originating in high readership national papers are often further disseminated to regional audiences through wire services and other mechanisms, so that their impact extends beyond their direct readership of a story within a given news outlet. Regional papers were used to supplement national coverage and diversify the types of content analyzed. Based on a review of State-level activities, we purposively selected three States (Maryland, Virginia, and Texas) as illustrative examples of the diverse state-level vaccine-related policy activities being considered during this time period. Virginia and Texas enacted school-based vaccine mandates, but through different mechanisms—passed by legislator in Virginia and by executive order in Texas. Maryland introduced mandate legislation but sponsors withdrew the bill.

The four year timeframe was selected to capture coverage during the development of the vaccine, the period immediately pre- and post-approval, and the time of widespread recommendation and initial uptake. News coverage after 2007 began to decline, so the four year window offered sufficient insight into the discourse surrounding the vaccine's introduction. The timeframe also allowed the exploration of a range of issues and provided an understanding of how coverage changed over time. Finally, this window avoided possible bias of reporting on a briefer time period, where coverage could be dominated by a particular event (e.g., legislative action). In addition to “hard news” reporting, we also analyzed editorials and letters to the editor, to capture a broad perspective of discussions on this issue (Smith, McLeod & Wakefield 2005).

Search terms included “HPV” or “cervical cancer” (in headline/lead paragraph) and “vaccine” (anywhere in text). The term “HPV” was more inclusive than “human papillomavirus.” We also tested common misspellings (e.g. “human papilloma virus” and “human pappilloma virus”) and seven additional articles were included. We observed that the vaccine name, Gardasil, was not used without the broader terms “HPV” and/or “vaccine”

and it was not used before its approval in 2006. Thus it was not included as a search term. Article inclusion criteria were one or more HPV vaccine mention(s), plus a mention of cervical cancer, cancer screening, HPV vaccination, legislation, or sexually transmitted infections. The goal was to examine media messages with a focus on the HPV vaccine, as opposed to all media messages which may have included a vaccine mention. Articles were excluded if they contained only minor mention of the vaccine and focused mostly on other topics (e.g. development of a HIV or breast cancer vaccine; corporate or financial summary).

### Structured Coding and Analysis

Coding categories were developed through an iterative, grounded theory process, in which the articles were discussed and used to draw lists of key terms and concepts, which were then grouped into categories and built into key topics for structured coding (Bernard & Ryan, 2010). Six main topic areas emerged: ethical issues (e.g. autonomy, girls-only mandate), HPV/vaccine/cervical cancer characteristics (e.g. efficacy, morbidity, mortality), government/state activities (e.g. FDA approval, legislation), health behaviors (e.g. vaccination adherence, 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 developed specific codes for content within each topic area, with a total of 91 unique variables captured. For each article, we selected up to two major topics (indicated by title and focus of the story), and also captured additional descriptors—event prompting story, sources quoted, story tone (positive, negative, mixed, or neutral), and conflict (present or not)—and article characteristics (placement of story, word length, news versus op-eds).

Reliability was established in several ways. Refinement of the coding schema occurred through four rounds of preliminary coding. Ten sample articles were coded each round to determine if and how well the coding options could be applied. All articles were discussed and discrepancies identified. Explicit coding rules were established during this phase to ensure consistency during the coding process.

Two team members each coded half of the articles. Coding questions were flagged and shared with the other coder in order to reach consensus. We assessed inter-coder reliability for three key constructs: tone, the presence of conflict, and topic. We double coded five percent of articles (n=22) and calculated kappa, which adjusts the observed rate of agreement for agreement based on chance. The reliability standard was kappa = 0.60, which indicates substantial agreement between coders (Bernard & Ryan, 2010). For tone, conflict, and topic, kappa values were 0.66, 0.69, and 0.86 respectively.

### Qualitative Sampling, Coding and Analysis

After initial coding, a purposive sample of articles was chosen for a more in-depth qualitative analysis. Articles were included if behaviors were previously identified as one of the main topics of the story. The reason for this subsample focus was to understand behavioral messages related to vaccination; for example, the vaccine encourages sexual activity, or individuals are to blame for their behavioral choices if they contract HPV. Therefore, this analysis focuses on articles with substantial behavioral content; an article that

simply mentioned that HPV is sexually transmitted would not have automatically been classified as behavior-focused.

Behaviors included sexual behaviors (e.g., condom use, promiscuity, abstinence, and early initiation of sexual activity) as well as health behaviors (e.g., use of medical care and screening). All articles included in this qualitative analysis were re-examined and qualitatively coded through an iterative process. Codes were developed based on existing literature, previously conducted quantitative analyses, and the initial article review as concepts related to sexuality emerged. Some of these concepts included identification of groups/organizations for or against HPV vaccination; discussions of abstinence or sex education; mentions of responsibility in relation to sexual activity or vaccination; promiscuity or implied approval of sexual activity; parents' opinions; analogies employed to discuss vaccination; and discussion of males in the context of sexual activity and vaccination. We defined promiscuity as sexual activity with a number of partners on a casual basis, but the code was mostly used when an article specifically used the term.

After the conceptual coding was complete on the sampled articles, coded content was reviewed in a constant comparative process, and codes were combined into patterns and topic areas. Conclusions were discussed and refined in an iterative process, with examination of the data for disconfirming evidence, to maximize theoretical validity (Bernard & Ryan, 2010). We use Tables 3 and 4 to provide text examples of findings; we selected text which our analysis suggested was typical rather than extreme or unusual, and richly illustrative in a concise manner of the thematic concept. Atlas.ti, version 6 was used to facilitate analysis.

## Results

A total of 447 articles were included in quantitative analyses, from which 49 articles (11% of the total) published in 12 newspapers were included in the qualitative analysis (Table 1).

The majority of articles were "hard news" rather than opinion (including letters to the editor and editorials), but were not published on the front page of the newspaper/section. The highest volume of coverage occurred in 2007. Nearly half of all articles were positive in tone (e.g. focused more on vaccine benefits than risks or barriers) but conflict was present in a majority of articles, indicating descriptions of competing viewpoints, tension, and lack of consensus. HPV/vaccine/cancer characteristics and government/state activities were the most common topics. Overall, specific mentions of federal vaccine approval/recommendations and a vaccine mandate were more common than mentions about sexual health behaviors.

Of the 447 articles, the majority were identified as having two rather than one major topic, so the topic category was coded 847 times. Three of the six article topics varied significantly over time (Table 2). The characteristics topic was less common but the government/state activities topic was more common in 2007 compared to all other years. The ethical issues topic was also significantly more common in 2007 and 2008 compared to other years, likely surrounding the debate over vaccine mandates. The health behavior topic did not significantly vary over time, but due to greater focus on vaccine approval and mandates,

2007 contained a smaller proportion of articles focused on behaviors than other years (Table 2).

### Qualitative Sample

In our sample of behavior-focused articles, the HPV vaccine was the primary focus of 26 out of 49 stories. Among 23 stories that did not focus on the vaccine, other subjects included prevalence rates of STIs including HPV (n=7), the link between HPV and other cancers (e.g. oral cancers) (n=4), preventing STIs (e.g. condom use, circumcision) (n=3), vaccinations in general (n=3), cervical cancer screening (n=2), sexual activity and its consequences (n=2), and HPV status disclosure to sexual partners (n=2).

Just over half of article publications were prompted by research studies. Seven articles reported research findings of STI rates among teens; two articles published in 2007 reported on a study in the *Journal of the American Medical Association* and five articles published in 2008 reported results from a CDC study. The *New England Journal of Medicine* was cited in a number of articles; three reported a 2007 study linking HPV to oral cancers; two reported a 2006 study on condom efficacy; others reported study results on circumcision and STI prevention, as well as HPV vaccine efficacy among sexually active women. Other reasons for publication include action by a government/regulatory body such as the FDA or ACIP (n=5) or state legislative action such as a potential vaccine mandate (n=2). In 24% (n=12) of stories, the news story or opinion did not reference a specific event, but involved a more general discussion of the vaccination issue. Another four articles were prompted by “other” events, such as going back to school or vaccine availability. Due to the focus on behaviors (as opposed to government/state activities or other stakeholder action), a small proportion of these articles were prompted by legislative activities or government action.

**Abstinence vs. sex education**—Discussions of abstinence and sex education revealed clear tensions and conflict over adolescent sexuality. About 20% of articles discussed HPV-related topics in the broader social context of abstinence/sex education programs. News stories sometimes labeled social conservatives as opponents to sex education, condom use, and HPV vaccination (four of 31 articles) and some opinion articles criticized conservatives and abstinence-only education (five of 18 articles). For example: “Condoms have been shown convincingly to prevent pregnancy and AIDS. But conservatives who want to see abstinence taught in schools have long argued that condoms do not protect well against diseases such as HPV...” (Johnson, 2006, np).

Some articles pointed to research studies on the high prevalence and/or low knowledge of STIs among teens to support arguments in favor of sex education (n=5) or to support the value of HPV vaccination (n=8). A few stories specifically placed blame on conservative government programs for high rates of STIs among teens (n=4). Many more articles discussed sexuality and abstinence messages at the family level, especially the need for parents to talk about sex education and HPV vaccination with their children (n=8). Such advice often came from doctors (n=6). Some articles presented parents’ uneasiness addressing sexual activity and HPV vaccination with their children (n=4) and a couple gave parents tips on how to broach “the talk.” (See Table 3 for examples.)



**The HPV vaccine and sexual activity**—The idea that HPV vaccination could encourage sexual behavior, send a message that premarital sex is acceptable, or lead to promiscuity was reflected in over 30% of articles in this sample. News articles reported these concerns held by “social conservatives” (Reimer, 2005, np), “groups promoting sexual abstinence until marriage” (Stein, 2006, np), opponents of HPV vaccination in general (Stein, 2007; Anonymous, 2007), or simply as a “commonly voiced thought” (Brody, 2007, np). One article reflected concern these opinions could negatively impact HPV vaccine uptake: “But pediatricians fear parents are getting negative messages about the safety of vaccines in general, and also may be influenced unduly by conservative groups who put the primary emphasis on abstinence and contend that vaccinating teens is tantamount to giving them permission to have sex” (Landro, 2005, np). In the quote above, pediatricians and conservatives are presented as having two opposite opinions. This idea of professionals and conservatives in conflict was explicitly stated in another article: “An eagerly awaited vaccine...has set off a new clash between health professionals and social conservatives” (Reimer, 2005, np). Many news articles addressing the issue attempted to dispute claims that HPV vaccination could have any impact on sexual behaviors.

Opinion articles specifically dismissed the premise that HPV vaccination should be associated with promiscuity or encouraging sexual activity. Authors of editorials and letters pointed out that HPV and/or future possibility of cervical cancer are not deterrents to sexual activity, that cancer prevention is more important than promoting abstinence; and that messages promoting sexual behavior can be found everywhere in American culture—movies, music, television. Of all the opinion articles in the sample in which the HPV vaccine was the primary topic (n=14) only two presented opinions supporting abstinence and in opposition to vaccination. The other 12 opinion articles about the vaccine were favorable (see Table 4 for examples).

**Common occurrences**—Articles containing arguments that the vaccine would not encourage sexual activity often attempted to normalize the vaccine within the context of both common behaviors and common infections. Individuals in professional positions, such as doctors, professors, and health policy analysts, were quoted as likening HPV vaccination to other common prudent behaviors. Analogies included wearing a seatbelt (n=3), putting money in a college fund (n=2), getting vaccinated before traveling abroad (n=1), and teaching teenagers never to drive drunk (n=1).

In 33% of articles, HPV infection was presented as very common and practically impossible to avoid once an individual becomes sexually active. Four articles labeled HPV as “ubiquitous” and an additional five articles mentioned that an individual does not need to be promiscuous to become infected since so many people have HPV. It was also conveyed that abstinence until marriage might not prevent HPV infection, as parents could not guarantee their daughters would marry someone uninfected (n=5), or avoid sexual assault or rape (n=4).

**Deadly cancer, lifesaving vaccine**—Nearly a quarter of articles presented cervical cancer as a life-threatening disease (22%). Opinion articles were more likely than news articles to label the vaccine as lifesaving (28% vs. 19%) (see Table 4 for examples). One

opinion writer went so far as to overstate the quadrivalent vaccine's potential, given the multiple types of HPV: "A vaccine has been developed that can save countless lives from many strains of HPV and the resulting disease of cervical cancer" (Ball, 2007, np). News articles also discussed HPV as life-threatening but tended to qualify the risk. For example: "...potentially life threatening complications" (Landro, 2005, np); "...potentially deadly cervical cancer" (Irvine, 2006a, np); "...the new vaccine that may keep [girls] from dying of cervical cancer" (Anonymous, 2007, np).

Other news articles provided more background or contextual information about cervical cancer, explaining that it is rare in developed countries that utilize screening, that the immune system often clears HPV without any serious consequences, or that only certain HPV types are problematic. For example: "If those women happen to have a certain strain (only a small subset is associated with genital warts and cancer), they may be faced with either an incurable but non life-threatening infection or abnormal Pap smears and, in a minority of cases, cervical cancer" (Goldman, 2006, np).

**Men, sexual transmission, & HPV vaccination**—Males were mentioned in almost 40% of articles (19/49)—13 news articles and six opinion articles. Almost all of these (15/19) were positive about the HPV vaccine; only one was mixed in tone and three were neutral. The vaccine was the primary topic in only five of 13 news stories but in five of six opinion articles that included a discussion of men or boys.

These news articles tended to report that HPV has been linked to cancer in men—such as oral, anal and penile cancers (nine of 13 articles)—so males might also benefit from vaccination (six of 13). Only two of the six opinion articles addressed male cancers and male vaccination. Men were also mentioned in seven news articles and five opinion articles for their role in transmitting HPV to women. Of the articles specifically discussing promiscuity or approval of sexual activity in relation to HPV vaccination (n=16), half also mentioned males.

## Discussion

Some newspapers with a large volume of articles in our overall analysis also contained a relatively high proportion of behavior-focused articles. For example, *The New York Times* contributed 12% of stories in the overall sample and 15% (eight of 52) of these focused on behaviors; the *Chicago Tribune* contributed 11% of articles in the overall sample and 12% (six of 50) focused on behaviors. However, two papers with a high volume of HPV-related news articles had a relatively low volume of behavior-focused articles: only 10% of stories in *The Washington Post* (seven of 67) and eight percent of stories in *The Houston Chronicle* (five of 62) focused on behaviors. As we discuss elsewhere, these papers had higher coverage around legislation and vaccine mandates (Casciotti et al., 2014).

This qualitative analysis enriches our understanding of how the media covered the HPV vaccine in the context of health behaviors along three key dimensions: sexual behaviors and risk; HPV infection and cancer; and gender.

Despite controversy about sexual health behaviors, articles tended to dispute claims that vaccination would lead to promiscuity or encourage risky sexual behaviors. In fact, few adolescents cite fear of STIs as a reason for abstinence (only 10% of males and seven percent of females surveyed in the 2002 National Survey of Family Growth) (Abma et al., 2004). It may be that while HPV is not a deterrent to sexual activity, adolescents fear and have greater awareness of STIs that are considered to be more serious. For example, in a small study of 140 adolescents aged 13-18 (83% African American, 81% female), 77% believed that an efficacious HIV vaccine would increase risky sexual behaviors (Webb et al, 1999).

Sexual behaviors were also discussed within the debate over abstinence-only versus sex education curricula. Discussion about sex education has historically been filled with conflict and controversy (Casper & Carpenter, 2008). Despite generally positive messages about sex education, discussing HPV vaccination in conjunction with such a controversial topic may make the vaccine more controversial by association. In our overall analysis (Casciotti et al., 2014), we found that articles discussing sexuality were more than two times more likely to contain conflict than articles without mentions of sexuality.

Another trend in coverage related to sexual behaviors was the specific identification of responsible parties—blame was placed on “conservatives” for opposing sex education and STI rates mentioned as proof that abstinence-only education is ineffective. However, parents were most frequently identified as the solution to improve teens’ knowledge and to reduce risky sexual behaviors. Individuals in professional positions (doctors, researchers) were often quoted as highlighting parents’ role in both sex education and HPV vaccination. Thus, while social groups such as conservatives were sometimes blamed for ineffective policies, in contrast, media messages largely placed the onus on individual parents to resolve the resulting sexual health issues, without suggesting policy-level solutions.

However, as these parental action messages were often communicated by medical experts, coverage served to reinforce parent-provider partnerships, even if only implicitly. The use of physicians and other individuals in professional positions to convey messages related to HPV vaccination is likely to be especially persuasive to readers, given that HPV vaccine uptake has been shown to be associated with provider recommendation (Dempsey et al, 2006; Gerend Lee & Shepard, 2007; Kahn, Ding, Huang, Zimet, Rosenthal & Frazier, 2009).

Addressing messages around HPV infection and cancer, news articles often cited research findings to support the case for vaccination. This included the vaccine’s potential to prevent other cancers related to HPV, especially cancers that affect men, as well as the high rates of STIs among female teens. Discussions of research studies tended to provide background and context for the information given, such as who was most affected and implications of the findings (e.g. vaccination is necessary/valuable). This type of thematic message framing leads the reader to consider how both institutions and individuals bear responsibility for the problem and can contribute to the solution (Iyengar, 1991).

The print news media consistently communicated the high prevalence of HPV among sexually active individuals. Widespread understanding of HPV prevalence could reduce stigma associated with infection and increase vaccine approval (Dempsey et al., 2006;

Gerend et al., 2007). Likening HPV vaccination to common preventative measures, such as wearing a seatbelt, may encourage parents to view the vaccine differently, with more emphasis on protecting children in the future than sending a message about sexual activity.

Our study found that the news media tended to present HPV as unavoidable and cervical cancer as life-threatening. This is consistent with previous research by Abdelmutti and Hoffman-Goetz (2009) that found a high volume of “fright factors” in HPV news articles, including the threat of death and the presentation of an illness as inescapable even when taking personal precautions (p. 429). Such representations of HPV and cervical cancer might create fear and overstate the necessity of the vaccine in the U.S.

Normalizing HPV infection might increase acceptance of the vaccine, but media messages might also create a heightened sense of fear of HPV and cervical cancer. While cervical cancer can be life-threatening—with estimates of 4,220 deaths among U.S. women in 2012 (American Cancer Society, 2012)—it is largely preventable through screening. Half of all women in the U.S. who develop cervical cancer have never had a Pap test, and another 10% of these women have not had a Pap test in the five years preceding diagnosis (Bosh & Harper, 2006). The vaccine does have great potential to reduce cervical cancer morbidity and mortality, but only if those who receive the vaccine are those more likely to get cervical cancer (females who do not have access to or do not utilize cancer screening tests). The media did not tend to discuss improved access to cervical cancer screening as an alternative to cancer prevention through HPV vaccination, or that progression to cervical cancer is rare.

In this subset of articles highlighting behavior, males received a significant amount of coverage. Discussing males in relation to HPV prevalence, transmission, vaccination and HPV-related cancers may defuse some conflict related to the topic. It has been argued that targeting only females for vaccination against a STI is unethical (Haber, Malow & Zimet, 2007; Javitt, Berkowitz & Gostin, 2008). Additionally, there tends to be more controversy associated with women’s as opposed to men’s sexuality (Casper & Carpenter, 2008). Bringing males into the discussion creates a shared burden of HPV transmission and vaccination and could reduce tension related to discussions of young girls’ future sexual behaviors.

### Limitations

First, study findings are limited to specific search parameters, such as time frame. It is possible that more recent news coverage and stories covered in other news and non-news media sources could yield different results. Second, this study only examined print news sources and there is a declining trend in paid circulation of print newspapers as more Americans use the Internet for news. In 2010, 46% of people said they got news online at least three times a week, compared to 40% who turned to newspapers (Rosenstiel & Mitchell, 2011). However, the top circulating newspapers included in this analysis also rank among the top for online readership (BurrellesLuce, 2013).

Finally, findings are specific to the subset of newspaper articles discussing the HPV vaccine in the context of health behaviors. Our analysis did not include all behavioral content related to vaccination, but rather those articles in which health behaviors was a focal point of

discussion. Additionally, discussions of the vaccine in other contexts, such as HPV legislation, could reveal different types of messages. However, our study findings are consistent with previous research while contributing a more in-depth analysis of media coverage about sexual health behaviors associated with HPV vaccination.

## Conclusion and Future Research

This study analyzed newspaper articles up to three years after FDA approval of Gardasil. Since then, a second vaccine, Cervarix, was approved for females and Gardasil was approved for males (both in October 2009). An analysis of media coverage since 2009 could reveal if messages related to sexual activity and HPV vaccination have changed over time, perhaps becoming less controversial as legislative mandate discussions have largely ended. Further research could also explore differences in sexuality message frames around Gardasil approval for females to that of males.

It would also be valuable to consider the influence of ethnically focused print media in the U.S., including non-English language news. Although there is some evidence that print newspapers are read most often by whites, followed by African Americans, Asians, and Hispanics (Edmonds, Guskin, Mitchell & Jurkowitz, 2013), there are likely unique cultural perspectives captured in ethnically focused and non-English language newspapers.

Overall, media messages analyzed here were supportive of HPV vaccination, presenting evidence that both males and females might benefit from the vaccine and arguing the vaccine should not be associated with promiscuity. Future research should investigate parents' perceptions of the types of messages discussed here and how discussions about adolescent and young adult sexuality impact vaccine decision-making.

Female sexuality continues to be a controversial topic, especially as it relates to school-age girls and adolescents. Such controversy can detract from more meaningful discussion and understanding of potential benefits and limitations of new health technology. Public health experts should be aware that media messages can not only convey controversy but also misrepresent the threat of disease and benefit of a treatment.

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**Table 1**

Characteristics of Newspaper Articles Discussing HPV Vaccination, 2005-2009, Overall Sample (n=447) and Qualitative Subsample (n=49)

	Overall Sample		Qualitative Sample	
	N	%	n	%
Newspaper articles	447	100	49	100
Paper (by circulation)				
USA Today	18	4	1	2
The Wall Street Journal	35	8	2	4
The New York Times	52	12	8	17
Los Angeles Times	16	4	0	0
Daily News (NY)	10	2	1	2
The New York Post	9	2	1	2
The Washington Post	67	15	7	14
Chicago Tribune	50	11	6	12
The Houston Chronicle	62	14	5	10
The Arizona Republic	41	9	6	12
The Virginian Pilot	29	6	3	6
The Richmond Times Dispatch	11	2	1	2
The Baltimore Sun	47	11	8	17
Type of article				
News article	335	75	32	65
Opinion/editorial	112	25	17	35
Article location				
Front page (of section/paper)	116	26	17	35
Other location	331	74	32	65
Year				
2005 (June-Dec)	28	6	5	10
2006	98	22	14	29
2007	249	56	21	43
2008	63	14	7	14
2009 (Jan-May)	9	2	2	4
Tone				
Positive (e.g. vaccine benefits)	206	46	34	69
Negative (e.g. vaccine risks)	44	10	2	4
Mixed	162	36	8	16
Neutral; None of Above	35	8	5	10

	Overall Sample		Qualitative Sample	
	N	%	n	%
Conflict present	296	66	29	59
Article topic (up to 2/article)				
HPV/vaccine/cancer characteristics	287	64	29	59
Government/state activities	246	55	3	6
Social influences/reactions/attitudes	117	26	14	29
Stakeholders	112	25	1	2
Behaviors	49	11	49	100
Ethical issues	36	8	1	2
Variables of interest (specific mentions)				
Sexual activity	196	44	47	96
Promiscuity	69	15	13	27
Abstinence	61	14	21	43
Federal approval/recommendations	260	58	21	43
Vaccine requirement/mandate	238	53	15	31
Pharmaceutical involvement	216	48	8	16

**Table 2**

Article Topics Overall and by Year, Overall Sample (n=447 articles)

Article Topic <sup>a</sup>	% of Articles Containing Topic by Year						X <sup>2</sup> *
	Total	2005 n=28	2006 n=98	2007 n=249	2008 n=63	2009 n=9	
HPV/Vaccine/Cancer Characteristics	287	64	71	50	90	89	<0.001
Government/State Activities	246	55	25	59	61	43	0.002
Social Influences/ Reactions/Attitudes	117	26	46	18	30	14	0.08
Stakeholders	112	25	32	19	28	19	0.23
Behaviors	49	11	18	14	8	11	0.14
Ethical Issues	36	8	0	2	11	10	0.005

<sup>a</sup>Up to two topics were coded for each article; 400 articles had two main topics, and 47 had one; a total of 847 topic codes were assigned to 447 articles. Column percents for frequency of topic appearance total >100%.

\* *p*-values reported for Pearson X<sup>2</sup> test for the variable by time where 2007 was the reference year compared to 2005-2006 and 2008-2009.

**Table 3**

Portrayal of Stakeholder Roles and Responsibilities: Examples from Qualitative Subsample (n=49 articles)

Source (type of article)	Stakeholders/responsible parties	Message	Text
<i>Wall Street Journal</i> 10/30/05 (news)	Parents	Research supports need for education	“Even for parents who may want to put their heads in the sand about the issue, it’s hard to ignore the data; nearly half of the nation’s new STD cases occur each year among teens....research shows that teens who have made virginity pledges ultimately have rates of STDs similar to young adults who didn’t make such promises” (Landro, 2005, np).
<i>The Houston Chronicle</i> 3/12/08 (news)	Parents	Research supports need for education; parents should educate	“‘Parents are in the driver’s seat,’ said Smith, a professor of obstetrics-gynecology. ‘They get to choose the message - change your behavior, use condoms, get vaccinated - but this study is the reality check; this study should put them on notice. This is the time for education’” (Tanner & Ackerman, 2008, np).
<i>The Baltimore Sun</i> 3/13/07 (opinion)	Parents	Parents should educate	“Deputy Director Bill Albert...asks whether such a vaccine, administered to 12-year-olds, would relieve parents of the awkward and intense discussions they should be having with their children about what sexual behavior is appropriate and at what age” (Reimer, 2007, np).
<i>The Washington Post</i> 1/29/07 (opinion)	Parents	Parents should educate	“I am continually amazed that the notion of promoting abstinence would or could be thought of as the answer. I would rather see caring parents teach their sons how not to get other parents’ daughters pregnant or infected” (Smith, 2007, np).
<i>The Chicago Tribune</i> 8/28/06 (news)	Parents	Parents should educate; doctor’s advice	“Dr. Kenneth Alexander...is a proponent of fully explaining the HPV vaccine to teens. ‘Parents only want to talk about cancer prevention. When they talk about STDs, they get pretty uptight,’ he said” (Irvine, 2006b, np).
<i>The Baltimore Sun</i> 8/16/07 (news)	Parents, Physicians	Parents and physicians should educate; doctor’s advice	“The discussion of sexual health and abstinence should always be part of the routine health visit. It is the responsibility of the parents and physicians to promote abstinence as well as educate about safe sexual practices” (Selby, 2007, np).
<i>The Washington Post</i> 11/7/06 (news)	Physicians	Research supports need for vaccine	“‘This adds more data that HPV is an important cause of cancer and that this is an important vaccine,’ said Joseph A. Bocchini Jr., who chairs the American Academy of Pediatrics’ committee on infectious diseases” (Stein, 2007, np).
<i>The Houston Chronicle</i> 3/12/08 (news)	Government	Blame conservative government programs	“Cecile Richards, president of Planned Parenthood Federation of America, said the study shows that ‘the national policy of promoting abstinence-only programs is a \$1.5 billion failure, and teenage girls are paying the real price’” (Tanner & Ackerman, 2008, np).
<i>The Baltimore Sun</i> 3/13/08 (opinion)	Government	Blame conservative government programs	“The findings make it clear that abstinence-only curriculums funded by the Bush administration are simply not relevant to large numbers of sexually active teens. However, it would help to make a new vaccine against HPV more accessible...” (Anonymous, 2008, np).

**Table 4**

## Promiscuity Related to HPV Vaccination: Examples from Qualitative Subsample (n=49 articles)

Source	Message	Text
<i>The Washington Post</i> 4/3/07	Not about promiscuity; prevention	“It’s not about promiscuity,’ said Dr. Anna R. Giuliano . . . ‘The more we can get that out of people’s minds, the faster we’ll be able to get prevention efforts out there’” (Stepp, 2007, np).
<i>The Arizona Republic</i> 5/20/07	Not about promiscuity; life-saving	“The cervical cancer vaccine for girls is a Godsend. This isn’t about promoting promiscuous behavior. It’s about protecting your daughter from a life-threatening disease” (Azizi, 2007, np).
<i>The Chicago Tribune</i> 7/15/06	Not about promiscuity; life-saving	“The point of the human papillomavirus vaccine is not promiscuity but saving lives. I have the HPV virus--got it from the only man I ever slept with, my husband. Celibacy is not the safety net it’s claimed to be” (Parra, 2006, np).
<i>The Washington Post</i> 4/3/07	Cancer prevention more important than abstinence	“This vaccine would have to be given to preteens before they are sexually active. If that gives them the ‘wrong message’ - that we expect they’ll have premarital sex - what exactly is the ‘right message’? That we care more about their virginity than their life?” (Stepp, 2007, np).
<i>The Baltimore Sun</i> 3/13/07	Cancer not a deterrent to sexual activity	“‘But the idea that a vaccine is going to change a young woman’s calculus about whether to have sex or not strikes me as intensely unreasonable,’ said Brown, who studies the sexual decision-making of young people. ‘...The reasons that young people do and don’t have sex have zero to do with the perceived risk of cervical cancer at the age of 40’” (Reimer, 2007, np).
<i>The Chicago Tribune</i> 9/25/05	HPV not a deterrent to sexual activity	“Some conservative groups worry that giving preadolescents a vaccine protecting them from human papillomavirus would give them a “green light” for sexual activity. My question: Since when has HPV been the only factor (or even a factor at all) in keeping kids abstinent?” (Hartman, 2005, np).

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