

COMMENTARY

Understanding the role of the news media in HPV vaccine uptake in the United States: Synthesis and commentary

Sarah E. Gollust^a, Susan M. LoRusso^b, Rebekah H. Nagler^b, and Erika Franklin Fowler^c

^aDivision of Health Policy and Management, University of Minnesota School of Public Health, Minneapolis, MN, USA; ^bSchool of Journalism and Mass Communication, University of Minnesota, Minneapolis, MN, USA; ^cDepartment of Government, Wesleyan University, Middletown, CT, USA

ABSTRACT

Vaccination rates for the human papillomavirus (HPV) vaccine fall below targets and only 2 states and the District of Columbia require the vaccine for middle school-age children. Messages conveyed through news media—to parents, providers, policymakers, and the general public—may contribute to sluggish vaccination rates and policy action. In this commentary, we review the findings from 13 published studies of news media coverage of the HPV vaccine in the United States since FDA licensure in 2006. We find 2 important themes in news coverage: a rising focus on political controversy and a consistent emphasis on the vaccine as for girls, even beyond the point when the vaccine was recommended for boys. These political and gendered messages have consequences for public understanding of the vaccine. Future research should continue to monitor news media depictions of the HPV vaccine to assess whether political controversy will remain a pronounced theme of coverage or whether the media ultimately depict the vaccine as a routine public health service.

ARTICLE HISTORY

Received 1 October 2015
Accepted 13 October 2015

KEYWORDS

health communication; HPV vaccine; media; policy

The CDC first recommended the human papillomavirus (HPV) vaccine for routine use in girls in 2006, and for boys in 2011. Yet as of 2014, only 39.7% of adolescent girls and 21.6% of boys had completed the 3-dose vaccine series.¹ The state policy environment has been similarly slow to endorse the vaccine, with only 3 jurisdictions—Virginia, Rhode Island, and the District of Columbia—including HPV as a required vaccine for middle-school students as of fall 2015. This slow implementation of policy is surprising, especially when compared to other vaccines at a similar point in their history, such as hepatitis B, varicella, and meningococcal conjugate vaccine.² What explains these low uptake rates for both individual behaviors and policy in the United States?

Mass media coverage of the vaccine may be an important underlying factor. It is well known that the mass media can influence the public and policymakers alike. For instance, the news media can set the agenda for policymakers, since they may consider news attention to be a reflection of constituent concerns.³ The news media—through framing issues in certain ways to emphasize some aspects to the exclusion of others—also shape how policymakers and members of the public think about health issues, particularly what considerations they draw from in coming to their opinion about that issue.^{4,5} In fact, researchers have already demonstrated an influence of media on HPV-vaccine related attitudes. Specifically, they found that framing the vaccine goal as cancer prevention rather than sexually-transmitted infection prevention increased women's intentions to receive the vaccine.⁶ Similarly, framing the vaccine's effectiveness as positive increased public support for vaccine requirements.⁷

Understanding the media's potential contribution to the public and policy discussion of the HPV vaccine requires understanding the general themes and specific messages that multiple forms of media have transmitted since the vaccine's introduction in 2006—a massive undertaking. Fortunately, there have been many empirical investigations of media coverage to help inform this question. We identified 13 distinct peer-reviewed papers that report on US mass media coverage of the vaccine around the time of its approval by the Food and Drug Administration (FDA) and thereafter. For this analysis, we included any qualitative or quantitative study published in a peer-review journal, in English, that reported on US (at least in part) news media coverage in print (newspaper or newsmagazine), television, or Internet news outlets. While social media sources have also discussed the vaccine fairly extensively (see, e.g., studies of YouTube^{8–10}), the focus of our commentary is the news media, given the important role of news media in setting public and policy agendas and is likely the primary source of media information on which parents (the key decision-maker about vaccines) would rely. We also exclude articles reporting on news coverage of the human papillomavirus only or news focused on vaccine development prior to the vaccine's arrival on the market.^{11,12}

We have observed 3 distinct phases in the HPV vaccine's position on the public agenda over the past 10 years: 1) immediate pre- and post-vaccine licensure discussion (2006); 2) discussion of the early (2006–2008) legislative efforts; and 3) the more expansive discourse following approval for boys in 2009 (2009 to present). We thus divide our analysis of news media

attention accordingly, and then provide some overall observations across all of the studies.

A new vaccine for cervical cancer: 2006

When the HPV vaccine was first licensed, news content tended to be fairly neutral, with the vaccine mainly framed as “the cervical cancer vaccine.”¹³⁻¹⁷ The vaccine was generally lauded as a medical breakthrough for women, as made apparent in headlines identified in a study by Habel and colleagues:¹⁵ “A Cancer Vaccine Triumph” and “Moms Lining up Daughters for Cervical Cancer Vaccine.” This primary framing of the vaccine for cervical cancer prevention explicitly identifies the population that would benefit from the vaccine as *women*. The gendered elements of the vaccine were a salient component of news coverage in this early stage, with one major theme of coverage concerning the vaccine’s (now discredited¹⁸) potential to promote promiscuity among young women.¹³⁻¹⁵ Other concerns of the vaccine (such as side effects) were a minor focus of coverage,^{15,17} although concerns about vaccine cost were discussed more commonly.¹⁵ None of the studies that focused on this phase immediately surrounding the FDA licensure discussed the specific sources who were cited in news coverage, but it is noteworthy that themes were mainly oriented around public health and medicine (with some religious and moral discussion), and not politics, during this stage.

The political period: 2006–2008

In contrast, media attention to the vaccine changed dramatically following Michigan’s initial consideration of a bill to require the vaccine for middle school-age girls, introduced in September 2006. Two dozen states followed suit by 2008, corresponding with a peak in news media attention to the vaccine occurring in 2007 around the time of Texas Governor Rick Perry’s February 2007 controversial decision to require the vaccine for middle-school girls via an executive order.¹⁹ Public attention to the vaccine similarly followed this event, as demonstrated in Figure 1, showing a huge spike in Google searches related to the HPV vaccine in the early part of 2007 relative to searches for other vaccines.

During this phase of active state debate over the vaccine, news coverage began using a political frame with which to cover the story.¹⁹ Rather than presenting essentially one

side of a health news event (a new vaccine available to prevent cervical cancer, the key message in the earlier coverage), coverage became “competitive”²⁰ that is, highlighting distinct arguments and information sources presenting positions for and against requiring the vaccine. In fact, one major focus of news coverage during this period was referencing the conflict and controversy around the vaccine; for instance, controversy was cited in 38% of coverage across all 50 states after 2007¹⁹ and conflict was cited in 76% of coverage in 4 print newspapers coverage of school mandates.²¹ Concerns over promiscuity were still present in news coverage, but additional anti-vaccine arguments appeared in news coverage as well, making this single message less prominent.^{19,22-25} A new message about parental autonomy in vaccine decision-making emerged at this time,^{19,21-24} as did an anti-vaccine message expressing concern about the potential for unknown and harmful side effects from a new vaccine.^{19,22} Yet despite the rise in more and varied anti-vaccine arguments appearing in coverage, based upon the small number of studies that examine the tone of coverage, articles in this period were still more positive than negative toward the vaccine on balance (among studies that included such an assessment).²¹⁻²³

In contrast to studies reporting on news coverage in the previous period, several studies examining media coverage during this period did analyze the sources cited in the content. Medical or health researchers and clinicians were generally the most frequently cited sources for information about the vaccine and/or their viewpoints on the vaccine.^{19,21-25} However, politicians also appeared in media attention,^{19,21-23} with the views of those identified as political conservatives dominating over other identified political officials earlier in this period and becoming more balanced politically later.¹⁹ Supporting the notion that the health perspective became less of the focus of news coverage during this period, one study reports that a substantial proportion of articles used no health frame at all.²⁵

The vaccine was less commonly referred to as “the cervical cancer vaccine” as it had been in news coverage in the first phase, with studies finding that the vaccine was often referred to as “the HPV vaccine,”^{22,23,25} a label that may be viewed as more inclusive and not so focused on young girls and women. Indeed, a few studies did find some mention during this time period of the vaccine’s implications for boys’ or men’s health

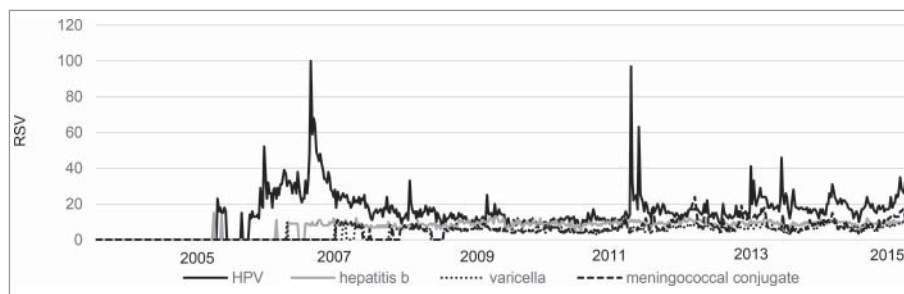


Figure 1. Google relative search volume trends (RSV) in the United States for the HPV, hepatitis B, varicella, and meningococcal conjugate vaccines from 2004 through 2015. 0 = average volume of search; 100 = 100 × average volume of search. RSV data were downloaded from *Google Trends* (www.google.com/trends). Weekly search data for the United States were retrieved using the terms “hpv vaccine,” “hepatitis b vaccine,” “varicella vaccine,” and “meningitis vaccine” from January 4, 2004 (the first date data are available) until September 19, 2015 (the last full week prior to manuscript preparation).

and/or male eligibility, albeit this was a minor theme of coverage.²³⁻²⁵

Boys become part of the story: 2009–2015

The most recent phase in the public agenda of the HPV vaccine began after the vaccine was licensed for use in boys (in 2009). Only one empirical study of media that met our inclusion criteria focuses on media coverage in this time period,²⁶ perhaps due to falling interest in the vaccine among media researchers or perhaps simply due to delays in publication of work. As a result, our ability to draw conclusions about media coverage during this phase is very limited. However, while there is a paucity of scholarship on media coverage during this time period, this does not mean that public attention to the HPV vaccine has declined. Quite the contrary, as [Figure 1](#) demonstrates sustained public attention to the vaccine (as measured by Google searches) with a peak in September 2011 rivaling that of 2007. This renewed attention corresponds to the HPV vaccine again receiving politicized coverage after then-Presidential candidate Michele Bachmann expressed concern over HPV vaccine side effects in an effort to distinguish herself from GOP rival Rick Perry.²⁷ In fact, the HPV vaccine continues to attract politicians' attention and remarks, with, for instance, GOP Presidential candidate Carly Fiorina also arguing against required HPV vaccines in highly publicized remarks in August 2015.²⁸

As Krakow and Rogers²⁶ state, one reason this period has seen sustained political-oriented attention to the HPV vaccine is that the 2011 CDC recommendation for vaccine in boys clashed in timing with the 2012 presidential campaign, and particularly the fall 2011 debates that re-ignited controversy around the vaccine. They reported that almost half of the news articles published in 2011 focused on political events and that those articles presented significantly less health information. Interestingly, despite boys being eligible for the vaccine during the whole time period, Krakow and Rogers found that only 25% of news articles in their sample even provided information identifying boys as being vaccine-eligible.²⁶ They suggest that the political events may have interfered with the possibility of media providing helpful information to the public about the CDC recommendation for boys and men. Continuing the trend from the previous phase, news coverage of arguments describing concerns about the vaccine focused more on safety arguments (cited in 43% of news articles) than the moral arguments concerning sexual behavior (cited in 25% of news articles).²⁶

Summary: Controversy and politics in news media coverage of HPV

Our analysis shows that while news media coverage has been dynamic—changing in tone and key messages over time—there are a few distinct themes that were surprisingly consistent, looking across 13 studies published using different methodologies and different types of media. One key theme of news coverage of the HPV vaccine over the past 10 years relates to political controversy, as evidenced by rising news space devoted to sources outside of the traditional health domain, rising arguments of a political or ideological nature (such as parental autonomy vs. government intervention), and news coverage focusing on

vaccine controversies, thus perpetuating an interpretation of the vaccine as controversial. We also observed a strong gendered emphasis in coverage, with news focusing mainly, if not exclusively, on girls and women even when the science and public health recommendations had become more expansive, although the types of gendered concerns (first promiscuity, and later side effects for girls) changed. Confirming others' suggestions,²⁶ our analysis implies that the original framing of the vaccine as for girls—resulting from the way the vaccine was originally tested, approved, and marketed only for girls—was “sticky,” dominating news media coverage even after the vaccine was recommended for boys. In other work, we similarly argued that news coverage of controversy can stick; once issues have earned and sustained a political valence, this politicization seems to remain an important component of media presentation and interpretation of the issue.²⁹ This framing is not without potential consequences: using survey data, we showed that news coverage of the political conflict over the vaccine was associated with lower support for state requirements for the HPV vaccine, and lower confidence in both doctors and government.

This review and analysis has some important limitations. First, our analysis focused only on those content analyses that have been published, so it is not a comprehensive assessment of media coverage in general—only of what samples and approaches researchers have used in studies published in peer-reviewed journals. Thus, we are limited in our synthesis to those media types other researchers chose to include in their assessments. Only three of the 13 studies included sources beyond print, with one study including online news sources,¹⁵ and 2 studies incorporating national televised network broadcast transcripts;^{16,30} the remainder of studies (see [Table 1](#)) included only print media (high-circulation national newspapers, local newspapers, and news magazines). No existing studies have assessed the content of local TV, which remains the predominant source of news information for Americans;³¹ this is a major gap in the research literature. We also did not include the existing published studies focused on social media outlets in our review (such as YouTube,⁸⁻¹⁰ and MySpace,³² but it is important to note that 88% of Millennials also get their news from social media³³ (note, though, that we did not identify any studies discussing HPV vaccine information on Facebook or Twitter, 2 major sources of social media news³⁴).

Second, while we can speculate on the importance of the themes and messages in coverage, we cannot claim that the patterns and themes we see in the news media have actually shaped public views or vaccination behaviors. Research examining media effects (such as using experimental designs) would be required to make those causal assertions.^{29,35}

In spite of these limitations, our assessment suggests that the news media do have some role in the broad public debate around the HPV vaccine. The news media provide the public with public health information about the vaccine to some extent, although our review suggests that more often, the news reminds the public that the issue is controversial and politically-charged. The merits of this media role in public health—on the one hand, helping to stimulate debate over complex public health issues, while on the other hand, potentially glossing over details that are critically important for public health

Table 1. Content Analyses of News Media Coverage of the HPV Vaccine from 2006–2011.

Study	Dates of Coverage	News Source	Methodology
Phase 1: Immediate Pre-/Post-licensure			
Abdelmutti & Hoffman-Goetz (2009) ¹³	Jan 2006 – Dec 2007	<i>The Globe and Mail, The National Post, The Toronto Star (Canada); The Wall Street Journal, USA Today (US)</i>	Mixed methods (directed/quantitative CA)
Abdelmutti & Hoffman-Goetz (2010) ¹⁴	Jan 2006 – Dec 2007	<i>Maclean's, Time Magazine Canada (Canada); Newsweek, Time (US)</i>	Mixed methods (directed/quantitative CA)
Habel, Liddone, & Stryker (2009) ¹⁵	June 8, 2006 – Sept 26, 2006	<i>Google News, Yahoo!News, CNN, MSNBC</i>	Quantitative CA
Kelly, Leader, Mittermaier, Hornik, & Cappella (2009) ¹⁶	Dec 2005 – Nov 2006	18 highest circulating US newspapers, 4 broadcast networks, <i>Associated Press</i>	Quantitative CA
Krieger, Katz, Eisenberg, Heaner, Sarge, & Jain (2013) ¹⁷	2006	Newspapers in Appalachia and non-Appalachia Ohio counties	Quantitative CA
Wallace & Ache (2009) ³⁰	2002 – 2007	Television news broadcasts (<i>ABC, NBC, CNN, FOX</i>)	Quantitative CA
Phase 2: 2006–2008			
Casciotti, Smith, & Klassen (2014) ²²	June 1, 2005 – May 31, 2009	13 US newspapers	Quantitative CA
Casciotti, Smith, Tsui & Klassen (2014) ²³	June 1, 2005 – May 31, 2009	Top 10 circulating US daily newspapers and 3 regional US newspapers	Mixed methods (grounded theory/quantitative CA)
Casciotti, Smith, Andon, Vernick, Tsui, & Klassen (2014) ²¹	June 1, 2005 – May 31, 2009	<i>The Washington Post, The Houston Chronicle, The Virginian Pilot, The Richmond Times Dispatch</i>	Mixed methods (qualitative CA/quantitative CA)
Correa & Harp (2011) ²⁴	Feb 2005 – Jan 2009	2 Virginia newspapers	Mixed methods (qualitative CA/quantitative CA)
Franklin Fowler, Gollust, Dempsey, Lantz, & Ubel (2012) ¹⁹	Jan 2006 – Dec 2007	<i>USA Today, The New York Times</i> , 2 local newspapers per state	Quantitative CA
Quintero Johnson, Sionean, & Scott (2011) ²⁵	June 1, 2006 – Dec 21, 2007	Nationally representative sample of articles in major US newspapers	Quantitative CA
Phase 3: 2009–2015			
Krakow & Rogers (2015) ²⁶	Jan 1, 2011 – Dec 31, 2011	Major US newspapers	Quantitative CA

(such as the vaccine's availability for boys) in favor of winning audience attention to political events—is debatable. Yet, it is important to emphasize that the media is unlikely to be the most important factor in shaping public views on the HPV vaccine: research continues to support the importance of provider recommendation in influencing vaccine decisions among young adults and their parents.³⁶ Based on this evidence, numerous HPV vaccine experts and commentators recommend that the vaccine become normalized in pediatric practice as a routine vaccine, treated the same as any other.^{37,38} This is particularly important for those with low socioeconomic status and underrepresented minorities, who receive a health providers' recommendation to vaccinate less often^{36,39} and also may face other communication-related barriers to receiving or navigating health information in the media.⁴⁰ Clinicians should recognize that their pediatric patients and families may enter the clinic with pre-formed beliefs (potentially only a vague idea of political controversy) about the HPV vaccine from the news media as well as from their social networks. As clinicians, public health researchers, and social scientists track the continued evolution of this issue on the public agenda, it will be important to examine whether the news media and politicians alike continue to treat this vaccine as deserving of a special type of attention, or whether, ultimately—after another 10 years of HPV vaccine history has passed—the vaccine finally becomes a routine, or even mundane, component of young adult health care.

Abbreviation

HPV human papillomavirus

Disclosure of potential conflicts of interest

No potential conflicts of interest were disclosed.

Funding

Sarah E. Gollust, PhD, was supported by a Research Scholar Grant, RSG-14-166-01-CPPB, from the American Cancer Society. Rebekah H. Nagler, PhD, acknowledges support from the Building Interdisciplinary Research Careers in Women's Health Grant (2 K12-HD055887) from the Eunice Kennedy Shriver National Institutes of Child Health and Human Development, the Office of Research on Women's Health, and the National Institute on Aging, administered by the University of Minnesota Deborah E. Powell Center for Women's Health. This content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

- Reagan-Steiner S, Yankey D, Jeyarajah J, Elam-Evans LD, Singleton JA, Curtis CR, MacNeil J, Markowitz LE, Stokley S. National, regional, state, and selected local area Vaccination coverage among adolescents aged 13-17 Years - United States, 2014. *Morb Mortal Wkly Rep* 2015; 64(29):784-92; PMID:26225476
- Schwartz JL, Easterling LA. State vaccination requirements for HPV and other vaccines for adolescents, 1990-2015. *JAMA* 2015; 314:185-6; PMID:26172898; <http://dx.doi.org/10.1001/jama.2015.6041>
- Yanovitzky I. Effects of News Coverage on Policy Attention and Actions. *Commun Res* 2002; 29:422-51; <http://dx.doi.org/10.1177/0093650202029004003>
- Entman R. Framing: Toward clarification of a fractured paradigm. *J Commun* 1993; 34:51-8; <http://dx.doi.org/10.1111/j.1460-2466.1993.tb01304.x>
- Chong D, Druckman JN. Framing Theory. *Annu Rev Polit Sci* 2007; 10:103-26; <http://dx.doi.org/10.1146/annurev.polisci.10.072805.103054>

- [6] Leader AE, Weiner JL, Kelly BJ, Hornik RC, Cappella JN. Effects of information framing on human papillomavirus vaccination. *J Womens Health* 2009; 18:225-33; <http://dx.doi.org/10.1089/jwh.2007.0711>
- [7] Bigman CA, Cappella JN, Hornik RC. Effective or ineffective: attribute framing and the human papillomavirus (HPV) vaccine. *Patient Educ Couns* 2010; 81 Suppl:S70-6; PMID:20851560; <http://dx.doi.org/10.1016/j.pec.2010.08.014>
- [8] Ache KA, Wallace LS. Human Papillomavirus Vaccination Coverage on YouTube. *Am J Prev Med* 2008; 35:389-92; PMID:18675530; <http://dx.doi.org/10.1016/j.amepre.2008.06.029>
- [9] Briones R, Nan X, Madden K, Waks L. When Vaccines Go Viral: An Analysis of HPV Vaccine Coverage on YouTube. *Health Commun* 2011; 27:478-85; PMID:22029723; <http://dx.doi.org/10.1080/10410236.2011.610258>
- [10] Keelan J, Pavri-Garcia V, Tomlinson G, Wilson K. Youtube as a source of information on immunization: A content analysis. *JAMA* 2007; 298:2482-4; PMID:18056901; <http://dx.doi.org/10.1001/jama.298.21.2482>
- [11] Anhang R, Stryker JE, Wright TC, Goldie SJ. News media coverage of human papillomavirus. *Cancer* 2004; 100:308-14; PMID:14716765; <http://dx.doi.org/10.1002/cncr.20006>
- [12] Calloway C, Jorgensen CM, Saraiya M, Tsui J. A content analysis of news coverage of the HPV vaccine by US Newspapers, January 2002–June 2005. *J Womens Health* 2006; 15:803-9; <http://dx.doi.org/10.1089/jwh.2006.15.803>
- [13] Abdelmutteri N, Hoffman-Goetz L. Risk Messages About HPV, Cervical Cancer, and the HPV Vaccine Gardasil: A Content Analysis of Canadian and US. National Newspaper Articles. *Women Health* 2009; 49:422-40; PMID:19851946; <http://dx.doi.org/10.1080/03630240903238776>
- [14] Abdelmutteri N, Hoffman-Goetz L. Risk messages about HPV, cervical cancer, and the HPV vaccine gardasil in North American News Magazines. *J Cancer Educ* 2010; 25:451-6; PMID:20232189; <http://dx.doi.org/10.1007/s13187-010-0087-9>
- [15] Habel MA, Liddon N, Stryker JE. The HPV Vaccine: a content analysis of online news stories. *J Womens Health* 2009; 18:401-7; <http://dx.doi.org/10.1089/jwh.2008.0920>
- [16] Kelly BJ, Leader AE, Mittermaier DJ, Hornik RC, Cappella JN. The HPV vaccine and the media: How has the topic been covered and what are the effects on knowledge about the virus and cervical cancer? *Patient Educ Couns* 2009; 77:308-13; PMID:19395221; <http://dx.doi.org/10.1016/j.pec.2009.03.018>
- [17] Krieger JL, Katz ML, Eisenberg D, Heaner S, Sarge M, Jain P. Media coverage of cervical cancer and the HPV vaccine: implications for geographic health inequities. *Health Expect* 2013; 16:e1-e12; PMID:21895901; <http://dx.doi.org/10.1111/j.1369-7625.2011.00721.x>
- [18] Bednarczyk RA, Davis R, Ault K, Orenstein W, Omer SB. Sexual activity-related outcomes after human papillomavirus vaccination of 11- to 12-Year-Olds. *Pediatrics* 2012; 130:798-805; PMID:23071201; <http://dx.doi.org/10.1542/peds.2012-1516>
- [19] Fowler EF, Gollust SE, Dempsey AF, Lantz PM, Ubel PA. Issue emergence, evolution of controversy, and implications for competitive Framing: The Case of the HPV Vaccine. *The Int J Press-Polit* 2012; 17:169-89; <http://dx.doi.org/10.1177/1940161211425687>
- [20] Chong D, Druckman JN. A theory of framing and opinion formation in competitive elite environments. *J Commun* 2007; 57:99-118
- [21] Casciotti DM, Smith KC, Andon L, Vernick J, Tsui A, Klassen AC. Print news coverage of School-Based Human Papillomavirus Vaccine Mandates. *J School Health* 2014; 84:71-81; PMID:25099421; <http://dx.doi.org/10.1111/josh.12126>
- [22] Casciotti DM, Smith KC, Klassen AC. Topics associated with conflict in print news coverage of the HPV vaccine during 2005 to 2009. *Hum Vaccine Immunother* 2014; 10:3466-74; <http://dx.doi.org/10.4161/21645515.2014.979622>
- [23] Casciotti DM, Smith KC, Tsui A, Klassen AC. Discussions of adolescent sexuality in news media coverage of the HPV vaccine. *J Adolescence* 2014; 37:133-43; <http://dx.doi.org/10.1016/j.adolescence.2013.11.004>
- [24] Correa T, Harp D. Women matter in newsrooms: How power and critical mass relate to the coverage of the HPV vaccine. *Journalism Mass Commun* 2011; 88:301-19; <http://dx.doi.org/10.1177/107769901108800205>
- [25] Quintero Johnson J, Sionean C, Scott AM. Exploring the presentation of news information about the HPV Vaccine: a content analysis of a representative sample of US newspaper articles. *Health Commun* 2011; 26:491-501; PMID:21469005; <http://dx.doi.org/10.1080/10410236.2011.556080>
- [26] Krakow M, Rogers B. Collateral damage and critical turning points: Public Health Implications of HPV Vaccine news coverage for boys and men in 2011. *Health Commun* 2015; in press
- [27] Gostin LO. Mandatory hpv vaccination and political debate. *JAMA* 2011; 306:1699-700; PMID:21979129; <http://dx.doi.org/10.1001/jama.2011.1525>
- [28] Ingraham C. Carly Fiorina, this is what happens when you let parents refuse to vaccinate their kids. *The Washington Post*, 2015, August 14
- [29] Fowler EF, Gollust SE. The Content and Effect of Politicized Health Controversies. *Ann Am Acad Polit SS* 2015; 658:155-71; <http://dx.doi.org/10.1177/0002716214555505>
- [30] Wallace LS, Ache KA. Hear All About It: Nightly Television News Coverage of Cervical Cancer Vaccination in the United States. *J Low Genit Tract Di* 2009; 13:154-8; <http://dx.doi.org/10.1097/LGT.0b013e31818f2316>
- [31] Pew Center for People & the Press. In changing news landscape, even television is vulnerable, 2012. Available at <http://www.people-press.org/files/legacy-pdf/2012%20News%20Consumption%20Report.pdf>
- [32] Keelan J, Pavri V, Balakrishnan R, Wilson K. An analysis of the Human Papilloma Virus vaccine debate on MySpace blogs. *Vaccine* 2010; 28:1535-40; PMID:20003922; <http://dx.doi.org/10.1016/j.vaccine.2009.11.060>
- [33] American Press Institute. How millennials get news: Inside the habits of America's first digital generation. Available at <http://www.americanpressinstitute.org/publications/reports/survey-research/millennials-news/> Accessed March 16, 2015.
- [34] Anderson M, Caumont A. How social media is reshaping news. *Pew Research Center*. Available at <http://www.pewresearch.org/fact-tank/2014/09/24/how-social-media-is-reshaping-news/> Accessed September 24, 2014.
- [35] Nagler RH, Fowler EF, Gollust SE. Covering Controversy: What Are the Implications for Women's Health? *Women Health Iss* 2015; 25:318-21; <http://dx.doi.org/10.1016/j.whi.2015.04.011>
- [36] Perkins RB, Clark JA. What Affects Human Papillomavirus Vaccination Rates? A Qualitative Analysis of Providers' Perceptions. *Women Health Iss* 2015; 22:e379-e86; <http://dx.doi.org/10.1016/j.whi.2012.04.001>
- [37] Rubin R. Why the "no-brainer" hpv vaccine is being ignored. *JAMA* 2015; 313:1502-4; PMID:25898032; <http://dx.doi.org/10.1001/jama.2015.2090>
- [38] Schuchat A. HPV "coverage." *New Engl J Med* 2015; 372:775-6; PMID:25693018; <http://dx.doi.org/10.1056/NEJMe1415742>
- [39] Polonijo AN, Carpiano RM. Social inequalities in adolescent human papillomavirus (HPV) vaccination: A test of fundamental cause theory. *Soc Sci Med* 2013; 82:115-25; PMID:23337830; <http://dx.doi.org/10.1016/j.socscimed.2012.12.020>
- [40] Viswanath K, Nagler RH, Bigman-Galimore CA, McCauley MP, Jung M, Ramanadhan S. The Communications Revolution and Health Inequalities in the 21st Century: Implications for Cancer Control. *Cancer Epidemiol Biomarkers Prevention* 2012; 21:1701-8; <http://dx.doi.org/10.1158/1055-9965.EPI-12-0852>