Advancing Cancer Control Research in an Emerging News Media Environment

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Cancer is both highly feared and highly newsworthy, and there is a robust body of research documenting the content and effects of cancer news coverage on health behaviors and policy. Recent years have witnessed ongoing, transformative shifts in American journalism alongside rapid advances in communication technology and the public information environment. These changes create a pressing need to consider a new set of research questions, sampling strategies, measurement techniques, and theories of media effects to ensure continued relevance and adaptation of communication research to address critical cancer control concerns. This paper begins by briefly reviewing what we know about the role of cancer news in shaping cancer-related beliefs, attitudes, behaviors, and policies. We then outline challenges and opportunities, both theoretical and methodological, posed by the rapidly changing news media environment and the nature of audience engagement. We organize our discussion around three major shifts associated with the emerging news media environment as it relates to health communication: 1) speed and dynamism of news diffusion, 2) increased narrowcasting of media content for specialized audiences, and 3) broadened participation in shaping media content. In so doing, we articulate a set of questions for future theory and research, in an effort to catalyze innovative communication scholarship to improve cancer prevention and control.


Cancer is both a highly feared and highly newsworthy set of diseases (1). Health is currently the eighth most common news topic overall, and cancer ranks first among disease-specific news coverage (2–5). News media help to form the boundaries of scientific debates (6,7) and influence both expert and public perceptions of complex issues such as cancer (7–12).

News coverage can influence health-related cognitions and behavior, for better or worse. Time-series analyses have linked attention to cancer in the news with aggregate, increased uptake of cancer-preventive behaviors, including mammography, avoiding smoking, and colon cancer screening (13–14). News coverage of celebrity cancer experiences in particular appear to promote the uptake of screening tests and behavior change, generally to the benefit of public health (15–20).

In contrast, cancer news coverage does not always mirror cancer control priorities. Coverage tends to be more focused on treatment than on prevention (21) and emphasizes individual-level behavioral risks relative to population strategies (22). Stories are at times rife with complex, confusing, or sometimes conflicting information (12,23–25), and a single issue or event often receives conflicting coverage from multiple media outlets (26–28). News coverage of research is frequently criticized for neglecting appropriate caveats, limitations, or acknowledgment of ambiguity, which in turn is associated with public confusion, frustration, and even disengagement with cancer control activities (22,29). Moreover, health and cancer news, similar to most journalistic beats, include use of exemplars and anecdotes to personalize and localize stories. Although exemplars are appealing and make a story newsworthy, they may be at odds with the larger evidence base. For example, a few studies have documented increased uptake of screening tests in the wake of major celebrity cancer events among age groups for whom these tests are not recommended (30).

Beyond individual behaviors, news coverage can also influence health-related policy. By defining an issue as worthy of media attention, news coverage heightens issue salience and defines priority areas for public attention (31–35). News coverage frames the public dialogue by emphasizing some aspects of issues over others and by shaping perceptions about who is responsible for health problems and their solutions (31,36–39). For example, news coverage of obesity can shape public support for obesity-related public policies by framing the issue in terms of its external causes [eg, the physical, social, economic, and marketing environment (40)] relative to individual factors [eg, lack of willpower among individuals (20,40,41)]. News coverage can also catalyze constituents to support or oppose policy change (42,43) and/or influence elite opinions and policymaking bodies (44). For example, news coverage has been associated with both the denormalization of smoking among the general population (45,46) and the passage of tobacco control policies in the United States and elsewhere (47,48).

Fundamental Shifts in the Media Landscape

As the public information environment rapidly develops and changes, basic questions pertaining to how to continue to understand and harness cancer-related messaging become increasingly pertinent. Rapid and transformational developments in the news...
media environment challenge how we conceptualize the nature and reach of news coverage of cancer, in addition to available and appropriate research methods, to capture and analyze the former’s effects on cancer-related attitudes, beliefs, and behaviors. Changes in how news is created, experienced, and disseminated necessarily alter the ways in which research on news coverage and its effects can and should be conducted. These changes invite new critical questions and may require new (or substantially modified) theories.

In this commentary, we characterize the broad social and institutional shifts that are occurring within health journalism into three broad categories: 1) an increase in the speed and dynamism by which news stories are generated, circulated, and embedded into public awareness; 2) the “narrowcasting” of media content for increasingly specialized audiences; and 3) broadened participation in shaping the content of what has traditionally been the exclusive purview of institutionalized news sources. Within our descriptions of each of these three changing facets of the new media environment, we will consider the relevance of these major shifts to collective efforts in cancer prevention and control. We also describe the challenges and opportunities that these shifts pose for our methodological approaches, theoretical conceptualizations, and research applications to further cancer control goals. Finally, we conclude our discussion with a series of research questions intended to guide scholarly inquiry into issues of news story exposure (how many people are reached), effectiveness (whether or not they achieve a desired outcome when exposure does occur), and efficiency (the cost per exposure to effective information). Consideration needs to be given to questions of how to study effects of health news stories that diffuse in rapid and unpredictable ways. We summarize the key questions for future theory and research from each of three major characteristics of the emerging news media environment in Table 1.

### Speed and Dynamism: Dissemination of Cancer-Related Messages

The emerging news media environment is complex and dynamic, characterized by a 24-hour news cycle that exists simultaneously on multiple media platforms and is in a constant state of flux. As of 2012, nearly one in four adults regularly access news content on at least two digital devices, including laptop and/or desktop computers, smart phones, and tablets (49). In addition to potentially accessing news content via multiple devices, the same content is also available on multiple channels and via various formats. For instance, in 2012, 33% of Americans reported regularly using search engines or news aggregator sites (eg, Google, Yahoo) to access news stories (49). Moreover, audiences are increasingly exposed to news content through social media such as Facebook and Twitter (50).

Alongside the many changes associated with the emerging news media environment, it is also important to note that traditional news media (wire services, well-established print news outlets, national network news, and radio) continue to be important and influential. The combined total audience for both online and print exposure to traditional newspapers remained at least steady as of 2010 (2), and traditional media content has thus far prevailed as the primary source for much of what is published online (50). The question of source credibility is often raised in relation to the emerging news media environment; questions of which media sources tend to break stories (both within and between traditional and emerging media) and which outlets are most likely to spur widespread dissemination of coverage are pertinent. One comparison of new stories in mainstream media to those that appeared in the blogosphere found that mainstream media predict blog coverage rather than the reverse, at least for now (51).

| Table 1. Selected questions for future theory and research on effective cancer communication in the emerging news media environment |
|-----------------------------------------------|------------------------------------------------|
| **Topic** | **Questions** |
| Speed and dynamism: diffusion of cancer-related messages | 1. How do cancer news stories diffuse and change across the public information environment? |
| | 2. How do we measure exposure to and effects of a cancer news story that has gone viral, including documenting the version of a story that people were exposed to? |
| | 3. How do we document sourcing and source credibility of cancer news stories given the dynamic nature of the emerging news media environment? |
| | 4. Which emerging media sources and channels are most influential on cancer-related beliefs, attitudes, behaviors, or support for policies? |
| Narrowcasting: selective exposure to cancer news | 5. Are elite media sources and the groups and people they cover still the drivers of health and cancer content in the news? |
| | 6. Do established predictive factors such as the congeniality and utility of information explain selective exposure to cancer information in the emerging media environment? |
| | 7. Are the news media’s traditional geographical and local concerns replaced with more spatially dispersed communities and concerns? |
| | 8. Does narrowcasting exacerbate knowledge gaps and cancer disparities among population subgroups? |
| Broadened participation: credibility of cancer-related messages | 9. How should public participation in the creation of news media content, in the form of commentary, “liking,” sharing, and story recommendations, be included into our measurement of cancer news content and its effects? |
| | 10. What types of cancer stories encourage (or discourage) public participation and user-generated content? |
| | 11. How often are public-participation-based and user-generated content on cancer news pieces accessed and consumed? |
| | 12. What effect does content created from public participation have on cancer-related beliefs, attitudes, behaviors, or support for policies? |
Methodological Challenges. The rapid and dynamic nature of diffusion of stories via the emerging news media raises perplexing challenges for those who wish to characterize the content and effects of cancer-related news coverage. Content analysis has become especially difficult because of the volume of potentially relevant material, the speed with which it changes, and the easy availability of news commentary and content from nontraditional news sources. These factors produce both conceptual and methodological challenges. Researchers need to develop better theories and tools to capture and characterize the contents of the vast and dynamic emerging news media.

Thus far, analyses of cancer news content have typically relied on human coding of content and have focused on one or two classes of news channels [eg, newspapers, local television news, and online news sources (12,16,22,52,53)]. There has also been considerable reliance on a small subset of news sources, including wire services (eg, Associated Press) and national newspapers (eg, Washington Post and New York Times) to serve as a reasonable proxy for the broader news media environment (54). The assumption that a sample of print sources serves as a good proxy for news media more generally is, however, fast losing face validity. One recent comparative study of online and print news coverage of prostate cancer screening studies revealed that online stories were longer and followed more quickly after the trials’ release (55), raising the question of whether emerging news media sources systematically cover cancer-related issues differently than traditional media.

The variety of potential health news sources and channels, combined with the sheer volume of stories offered by these sources and channels, presents researchers attempting to characterize cancer content with essentially two methodological options: 1) attempt to capture and categorize the entirety of cancer coverage from both traditional and emerging media using computer-automated coding methods (56) or 2) develop sampling strategies that are sensitive to the dynamic nature of print, online, and mobile environments and analyze this subset of content (either manually or via an automated system) and generalize to the overall population of cancer coverage.

Several research teams have already made considerable progress in developing valid, automated search strategies for news content (57); computer and communication scientists are designing and testing tools to allow rapid and accurate computerized content analysis of mediated sources (56,58,59). The ability to sample thousands of news stories alongside millions of tweets, postings, blogs, and other social media subsequently generated may reduce, through sheer volume, the impact of the various random factors related to particular stories but not the overall population-level impact of the full range of emerging news media coverage of a particular issue. Although computerized content analysis is a controversial undertaking if treated as a general tool to analyze any and all content, applications to specific contexts, even though covering very large domains of data, have demonstrated the potential to provide both reliable and valid measures (56,58,59).

Beyond sheer volume, there remain other major challenges to sampling dynamic, interactive, multimedia content. Print news outlets produce a “version of record,” whereas the content of online news stories can be (and often is) modified over time with minimal traces or a formal retraction. Determining story prominence is challenging because the placement of content on a Web site is also dynamic (60). Even without explicit efforts at story modification, the dynamic nature of the emerging news media may hinder our ability to accurately assess content as originally produced, thereby complicating measurement of exposure (61). Moreover, to the extent that one seeks to capture the dynamic nature of the online news environment, user-generated commentary occurs in real time, and news sources may show only a subset of these comments to a particular reader or may only make material accessible for a limited period of time.

Assessing effectiveness of a news story in the emerging news media environment increasingly needs to include its likelihood of diffusion, in addition to traditional measures of effects on knowledge, opinions, intentions, and behaviors. The likelihood that a cancer story will be transmitted across media sources and retransmitted by individuals across social networks is important for understanding its likely impact. Exposure, after all, is the sine qua non of effectiveness. Although news diffusion has long been a topic of research (62,63), the potential for rapid dissemination of news content (ie, “going viral”) across multiple media and interpersonal sources allows for the possibility of both oppositional and supportive public reaction within shortened news cycles. The rapid nature of news dissemination alongside the potential for audience interaction provides a potential opportunity for real-time monitoring of public sentiment, consideration of pathways for information sharing and discussion, anticipation of points of resistance, and (potentially) effective countermessaging or clarification of mischaracterized information.

Diversity of Perspective and Narrowcasting: Access and Exposure to Cancer News

With the emerging news media, access to a computer, tablet, or smart phone potentially provides individuals with access to a greater breadth of content than could ever have been possible with traditional news outlets. No longer is one tied to one’s local town-based, regional, or national news sources. It is now possible and often easy to subscribe to a news outlet from another part of the country, in a language other than English, or targeted toward people with whom one somehow shares a common identity, experience, or values. This breadth of available content could, in theory, permit individuals to be exposed to a greater diversity of perspective on health and social issues related to cancer prevention and control. In practice, research indicates that the emergence of news media has shifted news exposure in the other direction, increasing selectivity on the part of an audience member to select sources with a particular set of characteristics or appeal (64). Moreover, news media can now design content to appeal to a well-defined audience—a phenomenon known as narrowcasting (65). Selective exposure and narrowcasting imply that any single specialized medium or outlet will reach only a small number of individuals but that the individuals reached will potentially have more connectivity to the source and its content. These changes have and will continue to have profound consequences for selective exposure and avoidance of health information (64–69). With the growth of news media narrowcasting, important questions arise as to what drives people to select specific news sources.

Implications for Cancer Prevention and Control. Not everyone has equal access to all channels or platforms within the emerging
news media environment, nor is everyone able or willing to engage with the ever-expanding information universe. Issues of access and comfort of use heighten long-standing cancer control challenges pertaining to information disparities (70). Importantly, cancer is a set of diseases that are particularly prevalent among the aging, and as of now, older adults are less likely to access the Internet (71). Furthermore, given widespread disparities in cancer incidence and/or survival by socioeconomic and racial and/or ethnic groups, in addition to parallel disparities in access to and use of digital media (70), it is also critical for us to consider Internet access and usage patterns to ensure that our use of emerging media for cancer control do not reinforce or extend existing patterns of communication inequality between population groups.

Narrowcasting may also produce fundamental differences in the way that people consume and process news across traditional and interactive media. Researchers have previously distinguished between scanned information, acquired via routine exposure to mediated or interpersonal sources, and sought information, information acquired via active efforts to find specific information outside of one’s normal patterns of media or conversational exposure (72). Interactive media platforms provide opportunities for people primed to attend to news coverage of a health issue to explicitly seek out relevant stories while also providing fewer opportunities to encounter such stories via routine media use. This is important, because processing of sought information may differ in important ways from information obtained via more passive scanning of the emerging news media because interactive media can promote and facilitate audience engagement and participation in a way that is not possible in traditional media (48,72).

Methodological Challenges. Increased narrowcasting creates complexities in terms of the measurement of reach of a cancer news topic in the emerging media environment. For traditional news media, the Audit Bureau of Circulation (now Alliance for Audited Media) has long served as a source of data on the reach of print news, as has Nielsen Media Research (Nielsen) for network television news. Though these sources have acknowledged limitations, they have also developed and used standardized methods for determining media audience or reach, which the research community has incorporated into analyses (73). In comparison, news stories disseminated via social media have potentially extensive capacity to reach predefined social networks, but exposure levels are contingent upon the size of the networks and a complex, automated algorithm that determines the frequency with which a broadcast appears in a given user’s news feed. Although there are difficulties in assessing reach in the new media environment, commercial entities interested in determining online news reach and the influence of connectivity and social media (eg, Gnip and Datasift) are working on creating tools and measurement techniques to ascertain reach in ways comparable with those established by Nielsen ratings in the 1950s and 1960s. We can therefore expect to see the emergence of increasingly sophisticated tools to mine social media and news content about cancer in the emerging news media environment, in addition to determining the capacity and scope of audience engagement. These developments will need to be platform sensitive (if not specific) and will come at some cost to research and researchers because of their value in the commercial sphere. It will be important for researchers to prioritize the validation of any such data and measures for research purposes. Valid estimates of cancer news exposure are central to measurements of cancer news effects. It seems unlikely that one can still assume that knowledge acquisition via traditional mass media sources is a sufficient proxy for a complete examination of media effects, but the dynamic nature of the digital, interactive media environment raises new measurement questions.

Broadened Participation: Credibility of Cancer-Related Messages

In the past decade or two, there has been a shift from traditional news reporting toward more commentary, analysis, and punditry, and user-generated content has added an additional layer for consideration. Moreover, new media experiments are challenging traditional media for public attention. Specialty news sites such as Kaiser Health News and ProPublica have been developed, but these and other sites currently have limited ability to produce original content. There has also been a rise in citizen or participatory journalism (also known as “Pro-Am” or Professional Amateur) (2,74,75).

Implications for Cancer Prevention and Control. In the changing communication landscape, it is important that we expand our understanding of how cancer content is created and disseminated if we are to establish and maintain a full picture of what constitutes exposure to cancer-related news. The emerging news media environment now situates traditional news content alongside entertainment, punditry, analysis, and public commentary. To fail to take such context and content into account will be a failure to understand the forms of social influence created by both elite influence and the influence from content created by ordinary audience members. User-generated content, including both the substantive commentary deployed in textual and other forms and the evaluative responses to online news materials, might affect responses to news—but only if such content is consumed, understood, and acted upon.

Methodological Challenges. One step beyond the issue of “soft news” is the potential contribution of blogs to people’s online health news exposure. Blogs and social media are undoubtedly an important component of the online information environment, and they challenge traditional structures of news creation and delivery (76–78). The potential utility in monitoring blogs may be to gain insight into the world view of a diverse set of individuals and publics, similar to how letters to the editors have been considered (79,80). Blogs also have the potential to frame an issue for audience consumption because they are often interactive, encouraging the audience to add to the content through comments (80). Although at present blogs often repost versions of traditional media content (3), this practice may change over time. Regardless, it remains important to study how these differing filters may offer distinct interpretations of the same health story. The extent to which (at least some) blogs can achieve credibility typically afforded to traditional news media remains uncertain.

Discussion

The National Cancer Institute has long supported research focused on cancer information exposure, framing, and media effects (81). The
ongoing emergence of new media platforms, information sources, and channels means that researchers attempting to analyze the origin and/or effects of cancer-related news coverage must identify what counts as news and determine what are accurate assessments of exposure and impact. Such work is critical because effective public communication has consequences for cancer-related knowledge, beliefs, attitudes, intentions, and behaviors, in addition to broader efforts to create healthier environments via local, state, and federal policy. In this paper, we outline a variety of potentially meritorious unanswered research questions that arise from considering cancer coverage in the emerging news media environment (Table 1).

Nevertheless, as time moves on, the most critical questions are likely to change. Researchers should continue to examine the scientific accuracy of messages; the volume of coverage on particular issues or topics; and actors, events, or other news attributes that influence news coverage and what is judged to be newsworthy. Furthermore, how various types of scientific findings (new, preliminary, established, controversial, and syntheses) are integrated in cancer news reporting will continue to require systematic consideration.

Our intention here has been to catalyze thinking about innovative research strategies moving forward. Researchers studying emerging media should not only be cognizant of the changed character of these media but also be simultaneously aware of the classic questions of efficacious public communication, especially issues of exposure and effectiveness. Traditional definitions of exposure to single news stories or public health information created by social institutions no longer adequately represent how individuals consume health news. People still encounter news, entertainment, and advertising across traditional and new media, but it is now also easy to search for, create, and exchange information—generating supportive and oppositional responses at every step of that cycle. Studies should examine audience engagement with cancer news and demonstrate the relationship between content and volume of news coverage and key cancer-related outcomes. There are ongoing changes to the form and content of news media and how it is accessed and used, which must drive the nature and focus of research moving forward.

As the nature of the public information environment has changed, so too must our theories about the impact of new media ecologies and their effects evolve. These changes have fundamental implications for how we think about, study, and influence cancer-related news coverage for public health goals. Narrowcasting will continue to fully embrace and use the emerging news media environment to advance cancer control.

References


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