2015

Designing for Dissemination: Lessons in Message Design from "1-2-3 Pap"

Elisia L. Cohen
University of Kentucky, elisia.cohen@uky.edu

Katharine J. Head
Indiana University-Purdue University Indianapolis

Margaret J. McGladrey
University of Kentucky, margaret.mcgladrey@uky.edu

Anna G. Hoover
University of Kentucky, anna.hoover@uky.edu

Robin C. Vanderpool
University of Kentucky, robin@kcr.uky.edu

See next page for additional authors

Designing for Dissemination: Lessons in Message Design from "1-2-3 Pap"

Digital Object Identifier (DOI)
http://dx.doi.org/10.1080/10410236.2014.974130

Notes/Citation Information
Published in *Health Communication*, v. 30, issue 2, p. 196-207.

Authors
Elisia L. Cohen, Katharine J. Head, Margaret J. McGladrey, Anna G. Hoover, Robin C. Vanderpool, Colleen Bridger, Angela Carman, Richard A. Crosby, Elaine Darling, Mary Tucker-McLaughlin, and Nancy Winterbauer

HHS Public Access

Author manuscript

Health Commun. Author manuscript; available in PMC 2016 February 15.

Published in final edited form as:

Health Commun. 2015 ; 30(2): 196–207. doi:10.1080/10410236.2014.974130.

Designing for Dissemination: Lessons in Message Design From "1-2-3 Pap"

Elisia L. Cohen
Department of Communication University of Kentucky

Katharine J. Head
Department of Communication Studies Indiana University-Purdue University Indianapolis

Margaret J. McGladrey
Department of Health Behavior University of Kentucky

Anna G. Hoover
Department of Health Management and Policy University of Kentucky

Robin C. Vanderpool
Department of Health Behavior University of Kentucky

Colleen Bridger
Orange County Health Department Orange County, North Carolina

Angela Carman
Department of Health Management and Policy University of Kentucky

Richard A. Crosby
Department of Health Behavior University of Kentucky

Elaine Darling
The Center for Rural Health Development, Inc. West Virginia Immunization Network

Mary Tucker-McLaughlin
School of Communication East Carolina University

Nancy Winterbauer
Department of Public Health Brody School of Medicine East Carolina University

Abstract

Despite a large number of evidence-based health communication interventions tested in private, public, and community health settings, there is a dearth of research on successful secondary dissemination of these interventions to other audiences. This article presents the case study of "1-2-3 Pap," a health communication intervention to improve human papillomavirus (HPV) vaccination uptake and Pap testing outcomes in Eastern Kentucky, and explores strategies used to disseminate this intervention to other populations in Kentucky, North Carolina, and West Virginia. Through this dissemination project, we identified several health communication intervention

Correspondence should be addressed to Elisia L. Cohen, Department of Communication, University of Kentucky, 231 Grehan Bldg, Lexington, KY 40506-0042. elisia.cohen@uky.edu.

design considerations that facilitated our successful dissemination to these other audiences; these intervention design considerations include (a) developing strategies for reaching other potential audiences, (b) identifying intervention message adaptations that might be needed, and (c) determining the most appropriate means or channels by which to reach these potential future audiences. Using “1-2-3 Pap” as an illustrative case study, we describe how careful planning and partnership development early in the intervention development process can improve the potential success of enhancing the reach and effectiveness of an intervention to other audiences beyond the audience for whom the intervention messages were originally designed.

Recently, the National Institutes of Health (NIH), the Agency for Healthcare Research and Quality (AHRQ), the Centers for Disease Control and Prevention (CDC), and other national agencies such as the Patient Centered Outcomes Research Institute (PCORI) and U.S. Department of Veterans Affairs have focused their attention on the practice of designing public health interventions for effective dissemination and implementation (D&I) to influence health behavior (Brownson, Dreisinger, Colditz, & Proctor, 2012; Meissner et al., 2013). This increased attention reflects growing recognition among researchers and medical professionals that advances in intervention research are limited by the failure to translate evidence-based research findings into practice (Glasgow & Emmons, 2007).

Clearly, secondary dissemination of successful interventions is crucial to improving health and disease prevention outcomes (Meissner et al., 2013). Broader secondary dissemination occurs when researchers consider how to spread evidence-based interventions to other audiences or via other channels using planned strategies. To facilitate broad dissemination, Rabin, Brownson, Haire-Joshu, Kreuter, and Weaver (2008) argue that dissemination researchers should identify “processes and factors that lead to widespread use of an evidence-based intervention” (p. 118). Medically underserved populations potentially can benefit from previously developed evidence-based interventions, as the use of existing interventions eliminates the need for the time-and resource-consuming tasks involved with intervention development and evaluation that may not be available to those working with underserved populations. In addition, researchers tangentially benefit from intervention dissemination because they can replicate their study designs with different populations, employing different media and different settings and thereby providing further evidence of their interventions' effectiveness in improving health outcomes.

However, successful dissemination of interventions can face a variety of challenges. Among the most commonly cited reasons public health practitioners do not adopt evidence-based interventions are conflicting mandates, funding limitations, workforce capacity issues, doubts about intervention efficacy in their practice contexts, and cost concerns (Bekemeier, Chen, Kawakyu, & Yang, 2013; Sosnowy, Weiss, Maylahn, Pirani, & Katagiri, 2013). Indeed, dissemination of evidence-based health interventions in clinical and public health contexts may require very tailored approaches, given wide variance in organizational governance structures, funding sources, and mandates (Mays, 2011). In addition, in the communication literature, research designs often involve identifying specific channels, using planned strategies, and conducting audience research to design effective, targeted messages for a particular audience. This specificity in research design creates a situation in which

dissemination of the intervention to other populations—who may have differing access to media channels, be characterized by different salient audience attributes and demographics, and require different strategies for effective intervention delivery—is a potentially difficult task.

In order to maximize the reach, effectiveness, and value of evidence-based interventions, it is essential that health communication researchers and those with whom they work consider in advance the ways in which these programs may be disseminated to other populations. Specifically, at the early stage of intervention design, designers should consider (a) what types of organizations and communities are most likely to adopt health communication programs and the additional potential target audiences for the intervention, (b) adaptations that might be needed to target the message characteristics of the intervention to these future audiences, and (c) strategies or media channels for reaching these audiences. To illustrate the importance of these three concerns, we present a case study of the development of the "1-2-3 Pap" intervention in eastern Kentucky and the dissemination strategies used to partner with two public health Practice-Based Research Networks (PBRNs) and the West Virginia Immunization Network to implement the intervention with new target audiences and in diverse practice settings.

BACKGROUND: DEVELOPMENT OF THE "1-2-3 PAP" INTERVENTION

The foundation for the "1-2-3 Pap" intervention was built through extensive research and partnerships with community members. The CDC-funded Rural Cancer Prevention Center (RCPC), which focuses on cancer issues is Appalachian Kentucky, identified how young women living in Appalachian Kentucky were significantly less likely than their urban counterparts to receive dose 1 of the human papillomavirus (HPV) vaccine and to follow up with doses 2 and 3, even when the vaccine was offered free of charge (Crosby, Casey, Vanderpool, Collins, & Moore, 2011). RCPC researchers then conducted formative work exploring knowledge, attitudes, facilitators, and barriers to both Pap testing and HPV vaccination among local healthcare providers and young women living in Appalachian Kentucky (Cohen & Head, 2013; Head & Cohen, 2012; Head, Vanderpool, & Mills, 2013). On the basis of this formative research and community engagement, the RCPC designed the "1-2-3 Pap" video-based cervical cancer prevention intervention, which aimed to improve HPV vaccination uptake and adherence rates and guideline-appropriate Pap testing among young adult women aged 18 to 26 years living in Appalachian Kentucky (Cohen et al., 2013; Vanderpool, Cohen et al., 2013).

In consultation with the RCPC's Community Advisory Board, the "1-2-3 Pap" intervention was launched in 2010 in a medically underserved, economically distressed region of Appalachian Kentucky. Participants in the intervention were recruited into the study in local health departments, clinics, and community locations such as colleges, outdoor festivals, and local retail stores (Cohen et al., 2013). Medically and age-eligible young women first were provided with dose 1 of the HPV vaccine series free of charge ($N = 344$) and then asked to participate in a research study wherein enrolled participants were randomly assigned to either the intervention arm ($n = 178$) or the usual-care comparison arm ($n = 166$; Vanderpool et al., 2013). Women assigned to the intervention arm watched the 13-minute "1-2-3 Pap"

video, which consisted of messages about the importance of HPV vaccination and Pap testing. Design and development of the video was guided by the integrated behavioral model (Montaño & Kasprzyk, 2008) and the information-motivation-behavioral skills model (Fisher, Fisher, & Harman, 2003; Fisher, Fisher, & Shuper, 2009). The video featured a local female television news anchor, local health care providers (a nurse and a physician), and young women from the Appalachian community where the intervention took place. Women in both the intervention and comparison arms received follow-up calls from the local RCPC research nurses to remind them about completing doses 2 and 3 of the HPV vaccine series, the primary outcome of the research study. Findings indicated that the intervention was effective in improving vaccine adherence, as nearly half of the women (43.3%) randomized to the intervention arm completed the 3-dose series and only 31.9% of women assigned to the usual-care comparison group completed the series (percent relative difference of 35.7% [$p = .03$]; Vanderpool, Cohen et al., 2013). In adjusted analysis, women assigned to the "1-2-3 Pap" intervention were almost 2.5 times more likely than women in the usual-care group to complete the HPV vaccine series ($p = .001$; Vanderpool, Cohen et al., 2013). For a more thorough description of the "1-2-3 Pap" efficacy study, see Cohen et al. (2013) and Vanderpool, Cohen et al. (2013).

ADDRESSING THREE KEY DISSEMINATION CONCERNS RELATED TO "1-2-3 PAP"

The initial success of "1-2-3 Pap" in Appalachian Kentucky coupled with formative research with a broader population of Kentucky women (Cohen & Head, 2013; Cohen et al., 2013) demonstrated to the RCPC team that, with minor modifications, the intervention potentially could be retargeted for dissemination to other audiences. However, redeveloping the video for dissemination to other audiences beyond the initial target population required reconciling the tension between designing a targeted communication intervention based on extensive formative work with a specific population (i.e., our original "1-2-3 Pap" intervention in Appalachian Kentucky) and identifying other potential target audiences and delivery contexts for which the intervention would be appropriate. A second concern was identifying specific changes to the intervention message, such as modifications to the message source and content, which might be needed in disseminating the intervention to other audiences. A third concern was how to select and optimize effective means for reaching these potential future target audiences via distinct message delivery channels. In the sections that follow, we discuss these concerns and how the RCPC addressed them by partnering with three practice-based organizations: the Kentucky Public Health Research Network (KePHRN), the North Carolina Public Health Practice-Based Research Network (NC PBRN), and the West Virginia Immunization Network (WIN).

Concern 1: Identifying Additional Dissemination Contexts and Target Audiences

In planning in advance for dissemination of an intervention, a critical aspect of the intervention development process is identifying new contexts for dissemination and potential partners who can provide access to these other audiences (Bernhardt, Mays, & Kreuter, 2011). In order to do so, researchers must systematically plan to disseminate the intervention through a variety of methods to potential users. In addition to gaining the

support of potential users in the field, researchers must work to eliminate financial barriers to dissemination partnerships in dissemination planning (Viswanath & Kreuter, 2007). To address financial barriers in the context of the "1-2-3 Pap" intervention, first, the lead author secured university pilot funding to develop an initial adaptation of the video for statewide, general audiences. Securing such pilot funding allowed the research team to plan to extend the "1-2-3 Pap" intervention from the Appalachian Kentucky catchment area to create an adaption appropriate for a statewide audience and audiences in other similar states. This pilot adaptation involved altering message content to make a version appropriate for audience members who might not have had the first dose of the HPV vaccine and who were not from the Appalachian region of the state. The RCPC then asked Kentucky public health officials to help share both the original and the adapted video with potential partners to view. Although many researchers view such deviation from the initial intervention to be problematic, there are good reasons for iterative design of the intervention after researchers reflect on the success and limitations of the initial intervention design (Hecht & Miller-Day, 2010; we address these reasons for adaptation coinciding with dissemination later, as concern 2). In the Kentucky context, it was clear that adaptation would help us secure additional natural state and local partners who had heard about the initial intervention and who expressed interest in a revised video appropriate for all young adult female audiences. Thus, one important and over-arching design principle is that researchers reorient their design efforts to the needs of potential users and audiences (including considering new types of information in the format and languages appropriate to new potential audiences) rather than the planned initial intervention audience.

Researchers should proactively identify new audiences and specific possible partners that seem plausible—For example, researchers may proactively define and identify intervention goals and associated messages that potential new audiences have identified as important to them. In the case of HPV immunization, potential partners were interested in improving HPV immunization rates in their community's young adult female population and in developing strategies to improve adherence to the three-dose HPV vaccine schedule. By showing the intervention script and discussing the intervention with public health officials in Kentucky, the research team identified three potential new audiences: young adults who had not received the first dose of the vaccine who were 21–40 years old, adolescent girls (9–21 years old), and young men (for whom the vaccine manufacturers were seeking a federal recommendation). However, because the latter two audiences were not appropriate for receiving the core intervention message (that three doses of HPV vaccine and Pap testing are critical to cervical cancer prevention), we identified this first closely related audience's information needs early on as the most likely additional target for dissemination planning. The other two audiences offered potential areas for new research as targets for new, different intervention designs.

Another proactive component to developing partnerships for dissemination of "1-2-3 Pap" involved describing and championing the intervention at various conferences, meetings, webinars, and other venues where potential partners from a variety of disciplines and professional backgrounds were present. Personal marketing by researchers through professional associations, seminars and workshops, e-mail alerts, and journal articles is a

critical step to help potential other partners see the potential utility of dissemination for their context and audience (Brownson, Jacobs, Tabak, Hoehner, & Stamatakis, 2013).

To this point, RCPC researchers promoted the “1-2-3 Pap” intervention at regional immunization education and health conferences and encouraged those attending the conferences to consider similar strategies with populations in their own service areas. By having representatives of this Appalachian eastern Kentucky intervention address the West Virginia Immunization Network (WIN) annual conference, researchers became personal champions for their intervention at a natural potential site for dissemination, given the shared interest in improving immunization outcomes in an Appalachian population. With resources to invest in an adaptation of the initial intervention appropriate to its Appalachian audience (whose demographics and psychographics are similar to those of the original “1-2-3 Pap” Appalachian Kentucky target audience), the WIN became a natural dissemination adaptation partner and offered a second dissemination opportunity with a similar target audience. Furthermore, the WIN was willing to coordinate and champion dissemination to an established network of health educators, researchers, and clinicians who might want to use the adapted “1-2-3 Pap” intervention with their patient populations.

Researchers should look for opportunities to address multiple potential partners simultaneously—As the WIN partnership succeeded as a pilot project, RCPC researchers simultaneously sought other opportunistic partners for dissemination and presented the “1-2-3 Pap” intervention to 24 public health PBRNs at the National Coordinating Center for Public Health PBRNs' 2013 Annual Grantee Meeting (for information, see http://www.publichealthsystems.org/keeneland-2013.aspx). These public health PBRNs provide a promising avenue for translational collaborations (Mays, Hogg, Castellanos-Cruz, Hoover, & Fowler, 2013; Vanderpool, Brownson, Mays, Crosby, & Wyatt, 2013). In existence since 2008, the public health PBRN program brings practitioners from state and local health departments together with academic researchers to identify, study, and solve research problems that have real-world relevance (Mays, 2011). Public health PBRN projects focus on identifying the most effective and efficient means of organizing, financing, and delivering public health services, often in relation to the Public Health Services and Systems National Research Agenda (Scutchfıeld, 2012). A subset of research priorities within this agenda's Public Health Information and Technology domain directly addresses improving the translation and dissemination of evidence-based public health strategies into practice, making PBRNs ideal dissemination partners for this project.

Interested PBRNs were invited to sign up for additional information, with eight networks expressing initial enthusiasm for the project. A series of planning calls followed in which collaborative research designs were developed and networks evaluated their capacities to participate. Ultimately, two public health PBRNs—Kentucky and North Carolina—self-selected into the study, with each network developing its own research questions and approach to dissemination. Compared with the six who did not participate, the two networks that were included were the two best positioned for a subcontracting relationship with the University of Kentucky in the time needed to complete the scope of work within the federal sponsor's budget period. Additionally, both networks had clear champions and expertise parallel to the original RCPC team (including a relationship with a communication specialist

and public health researchers trained in evaluating dissemination projects), presenting the most viable dissemination partnerships for testing the feasibility of intervention dissemination. The Kentucky PBRN had previously been made aware of the 1-2-3 Pap intervention as adapted and "dissemination-ready" for the statewide audience. The NC PBRN had a local media producer and academic partner available to re-adapt the video. This strategy both maximized potential for dissemination success and afforded the research team the opportunity to evaluate and develop resources to guide future dissemination efforts.

The RCPC provided material and financial support to PBRN investigators (champions) to work in partnership with the RCPC and other dissemination partners (often "opinion leaders" within their domains of expertise) within their states to identify locally salient messages and evaluate the relevant knowledge, attitudes, and behavior influencing HPV vaccination uptake and adherence in their target populations. Each champion used segmentation techniques to identify key target audiences and elicited feedback from practitioners, who were critical to determining how to adapt and deliver the effective "1-2-3 Pap" intervention to new audiences. Importantly, researchers could draw lessons from these partnerships in evaluating the feasibility of disseminating "1-2-3 Pap" to new audiences and implementing it in diverse contexts.

Identification of additional partners should be guided by experiences with variation in uptake—Research has established that health departments and clinical practices in which key opinion leaders state that they use novel interventions report greater use of recommended, evidence-based interventions relative to sites without opinion leaders (Rogers, 2010; Valente, 2010). Early interactions with local public health officials can affect the rate of diffusion and likelihood of their adoption of recommended practices (Mays et al., 2013; Merrill, Carley, Orr, Jeon, & Storrick, 2012). Therefore, as discussed in the previous section, identifying intervention dissemination resources such as effective champions (i.e., lead partner investigators) and opinion leaders (e.g., health department educators) within potential partnering organizations can guide the selection of additional partners.

Concern 2: Identifying Intervention Adaptations

Although Kentucky (and to some extent, West Virginia) offered fertile ground to examine a centralized intervention design process for dissemination to populations with similarities to the initial target audience, the question remained whether the intervention could be distributed to a more diverse audience with "scalable efficiency" (Dearing, Maibach, & Buller, 2006). To do so required considering potential adaptations that would allow for local redevelopment and evaluation during the intervention design process.

Identify information critical to matching new audience needs—One of the most challenging aspects of disseminating the "1-2-3-Pap" intervention was identifying how to adapt it to new audiences. By identifying information that potential new audiences have identified as important, researchers can assess whether information included will be accurate and relevant to other potential audiences. Information that is not accurate or relevant for a different potential population, then, may be necessarily subject to change or substitution to maximize the potential success of dissemination to other populations. Alternatively,

researchers may propose design adaptations or design information that potential users may not know they might need or may not think to request.

Partnering with champions across three states interested in adapting the intervention to reach both similar and dissimilar audiences provided valuable lessons in designing “1-2-3 Pap” for dissemination. In working closely with our three partners, the RCPC team devoted extensive time and energy to message redesign considerations. All intervention researchers seeking to disseminate their work will confront the question of how to resolve the inevitable tension between fidelity to the original message design and the need for flexibility in adapting an intervention for use in new contexts. From an intervention developer's perspective, it was indeed difficult to “let go” of an intervention for a redesign or employ an adapted version that might not be fully tested, especially when the original intervention is a highly targeted message based on extensive formative work with a specific population, as was the case with “1-2-3 Pap.” However, as noted by Cohen et al. (2008), “The need to adapt does not indicate a poor intervention or an inexperienced research team; it is a common part of the [dissemination] research process” (p. S387). Thus, it is just as important to attend to considerations specific to the dissemination process as it is to understand the factors that influence the original intervention design. As Slater, Finnegan, and Madigan (2005) noted, these strategic adaptations create an important bridge between academic research and practice; dissemination strategies that include adaptations and channel changes also have the potential to increase the reach and effectiveness of the intervention.

We employed multiple strategies for dissemination to new audiences and potential channels (for details, see the appendix). In West Virginia, we maintained fidelity to the original intervention in an adapted implementation strategy (i.e., as a video designed for use in clinical and community practices to coincide with vaccine administration) while making minor adaptations to appropriately localize the script. This approach was appropriate because the West Virginia audience and immunization partner goals most closely fit with the audience and goals for the original intervention. In Kentucky and North Carolina the strategies differed. The Kentucky dissemination research plan was to determine whether content from the original intervention was compatible with the intervention's purpose for participating health departments. In contrast, North Carolina offered the opportunity to re-adapt the intervention developed for a narrowly tailored population (Appalachian Kentucky) to suit additional populations and contexts not originally considered in the research design. These strategies required adaptations to the original intervention for dissemination purposes (see appendix).

Identify material that can be adapted for similar audiences—In preparation for dissemination, the research team centrally planned two adaptations of “1-2-3 Pap” that would be guided by formative research. The goal of this central planning was to create videos available for dissemination and implementation that would be low-risk, low-cost, and scalable. For example, these two adapted videos for use statewide in Kentucky and West Virginia were filmed at the same time to save studio time and costs. In addition, when writing the script for the video, meeting with our media team to draft the storyboard, and filming scenes with the actors, we often had to leave significant amounts of material “on the cutting room floor.” To the extent possible, we tried to keep track of that material and

archive it for future use. In the case of the original “1-2-3 Pap” video intervention, this “extra” material included b-roll (supplemental or alternative footage recorded during the original video shoot), script ideas that were too “general” or did not fit our particular audience, and graphics that were designed but never used. We also repeatedly filmed the same scenes and lines with multiple actresses/participants while we had studio time. (Ideally, for national distribution, a video intervention would film segments with women of different racial/ethnic backgrounds, with different clothing, and from different areas of the country.) In the process of examining the script, we also identified the sections of the script that were essential or “core” persuasive health messages closely tied theoretically and practically to the original message development goals. These core message segments were retested with new populations for “fit” and for minor changes in language. We also identified persuasive message components that could vary or could be modified to address different target audiences without losing the core persuasive health message. (For adaptation details, see the appendix.)

The adaptation for West Virginia was minor, with the WIN paying for editing costs to change the localizing elements of the original “1-2-3 Pap” video that were specific to Appalachian Kentucky to those appropriate to West Virginia. These changes meant that the original anchor spokesperson needed to return to the studio to refilm HPV vaccination, cervical cancer, and Pap testing statistics and information segments to be retargeted to West Virginia. The WIN's logo was added to the video. On the other hand, the adaptation for Kentucky was broader in scope. An important goal was to include a culturally diverse set of actors to make the video more culturally appropriate for statewide dissemination. Messages indicating that women had already received the first dose of the HPV vaccine were altered, and an explanation for why one would choose to receive the first (and second and third) dose of the vaccine was included to broaden the potential reach and utility of the video to nonvaccinated audiences. In both of these centrally planned adaptations, however, the core message segments of the video developed from formative research were held constant, as the formative research suggested that they were appropriate for a statewide Kentucky and broader Appalachian audience, including West Virginia.

Identify material that can be adapted for dissimilar audiences—To better understand how to effectively adapt “1-2-3 Pap” for dissimilar audiences, the RCPC partnered with the NC PBRN to establish an effective model for adapting the video. The NC PBRN shared Kentucky's interest in the structural drivers of organizational variation across its participating local health departments. After viewing the original “1-2-3 Pap” intervention, a group of NC public health practitioners recommended message content and delivery adaptations to improve salience for the state's audiences. These recommendations included adding local b-roll from regions around North Carolina, selecting local talent who reflected state demographics and audiences of interest, striking a more conversational tone, substituting a local narrative of a young woman who received a cervical dysplasia diagnosis due to HPV that required treatment, and shortening the video's length. The resulting adaptation, “One … Two … Three … Pap NC” was produced during a 3-month period, after which the NC PBRN sought feedback from the RCPC and National Coordinating Center investigators. The video then was further edited and disseminated via a YouTube link and

hard-copy DVDs to health departments in 33 participating counties or 28 health jurisdictions (including three multicounty districts).

Taken together, these dissemination models and state partnerships offered the opportunity for “1-2-3 Pap” to be translated from an evidence-based intervention with local effectiveness to a program with potential for message adaptation and scalability. The appendix summarizes these message adaptations. When the RCPC pursued partnerships with public health services and systems researchers (Vanderpool, Brownson et al., 2013), we found that public health PBRNs were natural partners for determining optimal pathways for disseminating the “1-2-3 Pap” video intervention through the public health system. However, the research team also realized that to succeed in national dissemination, we would need partners not only willing to develop and evaluate a more extensive adaptation of the intervention but also willing to consider flexible options for dissemination strategies for these adapted products (Berwick, 2003; Dusenbury, Brannigan, Hansen, Walsh, & Falco, 2005).

Concern 3: Identifying Means for Reaching Potential Future Audiences

Although message designers often design for the execution of their health communication interventions in specific contexts, when considering broader dissemination, researchers also should consider additional channels that might be used to increase the reach of these interventions to other populations. Delivery channel concerns are particularly crucial in terms of potential threats to intervention fidelity that might be posed by adding or changing different delivery channels or media formats, such as repurposing an audio–video clip (e.g., a television spot) into an audio-only format (e.g., radio). Thus, to create effective health communication interventions for dissemination, communication researchers also must consider message design factors related to the delivery medium.

The WIN developed an intentional “1-2-3 Pap” dissemination plan for the adapted video that they commissioned. First, two RCPC investigators (including the lead author) gave an hour-long presentation at the WIN annual meeting and answered questions from practitioners about how to communicate about HPV vaccination with patients of different age groups. As part of the presentation and conference registration, practitioners received a “1-2-3 Pap WVA” DVD for use in their practices. Second, since the presentation the WIN has continued to distribute videos to health care providers across West Virginia through various strategies, including announcing the availability of the video by e-mail communication to coalition members and partners, sending newsletters identifying the video availability in DVD form and mailings of the DVD, distributing the DVD at state health conferences, and having other health associations (including the WV Nurses Association, the WV School-Based Health Assembly, the Rural Health Association, the WV Chapter of the American Academy of Pediatrics, and the Mountains of Hope Cancer Coalition) communicate the video's availability to their members. To date, more than 300 “1-2-3 Pap” DVDs have been distributed to partners (an additional 300 have been ordered), including local health departments, community health centers, schools, free clinics, school-based and private health clinics, rural health centers, and hospitals.

In contrast, in Kentucky, the KPHReN, the National Coordinating Center, and RCPC investigators recruited local health departments through a presentation at a monthly meeting of the Kentucky Health Department Association (KHDA) to engage in a funded pilot study evaluating different implementation approaches. This venue for recruiting local health departments (LHDs) was appropriate given the Brownson et al. (2013) findings that health department personnel often learn about research findings through professional associations. Of the 18 LHDs in Kentucky that chose to participate, two chose the replication of the original study in which patients viewed the video in the clinic immediately following receipt of the first HPV vaccine dose, 13 chose to provide access to the video online through either the health department's website/social media pages or its YouTube channel, and three elected to play the video on a loop in the health department waiting room or lobby for all patrons to view.

A similar approach was taken in North Carolina. NC LHDs were recruited through an announcement at the state health department conference. The recruitment announcement was made by a prominent LHD director, who was also 2013 LHD Director of the Year, and accompanied by a fact sheet. Researchers sent three follow-up e-mails to LHD directors via the LHD director listserv. Out of the 34 health jurisdictions (36 counties) that originally agreed to participate, 28 (33 counties) ultimately participated in the dissemination research study: 14 self-selected into the clinic setting, 12 chose the website/social media/YouTube channel route, and seven chose the lobby delivery location.

One lesson to draw from these different cases is that it is incumbent on researchers to determine the potential channels that are appropriate modalities for implementation and to be open to what potential partners believe are effective channels for these new audiences. In the case of “1-2-3 Pap Kentucky” and “One … Two … Three … Pap NC” the research team defined the potential channels and then the local health departments self-selected among three specific delivery channels. That is, the video could be delivered via multiple modalities: on a clinic iPad or a clinic computer (whichever was appropriate), on a loop in a waiting room, or even shared on YouTube, social media, or on the clinic's website. In the West Virginia context, we maintained fidelity to the DVD-based dissemination approach, and practitioners could implement the video intervention for clinical use as they saw fit. Research partnerships, then, must balance opportunities for partner creativity and adaptations with use of appropriate delivery channels as determined by the intervention developer. The appendix summarizes the message and channel considerations.

DESIGNING FOR DISSEMINATION: LESSONS LEARNED FROM “1-2-3 PAP”

Based on our experience with disseminating the “1-2-3-Pap” intervention, we conclude by presenting recommendations for others working in applied health communication intervention design to design for dissemination. The lessons we learned in disseminating this intervention to other audiences centered on three main areas: (a) identifying potential dissemination partnerships for reaching audiences for secondary dissemination, (b) determining necessary message design modifications, and (c) identifying appropriate channels for delivery that may differ from the original intervention. All of these concerns can and should be addressed early in the intervention design process. Certainly these steps

might take extra time; however, researchers should consider that they are not much different from the steps taken in developing the intervention for the primary audience. In fact, effective health communication intervention research without effective dissemination is like planting seeds without watering them; the intended change will never take root. Here, we summarize our experiences in disseminating “1-2-3 Pap” and leave the reader with some suggestions for designing for dissemination.

First, researchers should be attentive to opportunities to enhance demand for evidence-based interventions. One way to enhance demand for an intervention is to adapt it to different audiences. As a first step in dissemination of an evidence-based intervention with a clear target audience, the RCPC used planned strategies to increase usage of the “1-2-3 Pap” DVD in clinics within the target population. Although the intervention could be reproduced in a clinical setting with high fidelity, the message strategy itself was limited to its target audience of women receiving the first dose of the HPV vaccine. However, we realized that with very little effort, we could adapt the video and its messages to broader audiences. For example, we discovered that with minimal editing, the video could be generalized to gain relevance for women who had not yet received the first dose of vaccine.

A second way to enhance demand is by publicizing the intervention to appropriate decision makers and potential partners. Social marketing and diffusion principles can be adopted to ensure effective dissemination of an evidence-based intervention after initial execution. For example, in the case of “1-2-3 Pap,” we sought continued publicity for the original intervention to help enhance demand. As such, “1-2-3 Pap” was featured during National Immunization Awareness month (August 2013) as an effective intervention by the CDC on their website (http://www.cdc.gov/Features/hpvvaccinations/index.html). Additionally, to increase interest among others who may want to employ our approach to designing and disseminating health communication interventions, the RCPC research team participated in a nationally broadcast webinar sponsored by the CDC's Prevention Research Centers Program Office in March 2014. During the webinar, research team members were able to share the story of “1-2-3 Pap” as an intervention developed to improve adherence to the HPV vaccination protocol, increase awareness of the intervention's success, and encourage future dissemination partnerships.

Third, researchers should be open to adapting and extending intervention messages to new audiences. To do so may require that researchers develop messages in consideration of all partners who might be necessary to ensure successful secondary dissemination into practice contexts. Identifying potential new audiences and partnerships for message dissemination is a critical first step toward this end. Often researchers work within academic organizations with few reward structures or incentives for dissemination; however, researchers may partner with organizations such as PBRNs, which are well suited to assist. Importantly, researchers with experience in evaluating the effectiveness of randomized controlled intervention trials and other programs may lack expertise to disseminate programs and evaluate the effectiveness of the dissemination and implementation process. In recognition of this limitation, NIH has sponsored the Training Institute for Dissemination and Implementation Research in Health series to bring together researchers to discuss scientific strategies to improve dissemination and implementation science (Rabin et al., 2008).

In planning for dissemination, it is important to acknowledge many barriers. Early on, we identified that primary care providers, local health departments, and other organizations may have differing views of whether and how this video-based intervention should be adopted. One clear lesson that was reaffirmed in this process was the importance of taking a participatory approach to involving research champions and their partners in all aspects of the dissemination process. Indeed, in both North Carolina and Kentucky, champions were able to maximize the potential number of interested research partnerships by allowing partners to self-identify appropriate channels for adoption of the intervention appropriate to their specific organizational context and population. Clearly, there are many barriers to successful dissemination partnerships that are not fully addressed by this case study, including conflicting mandates, funding limitations, workforce capacity issues, doubts about intervention implementation efficacy, and cost concerns. However, many of these barriers may be identifiable and surmountable if researchers consider potential dissemination partnerships during formative development stages. Identifying and communicating with potential champions and their partners early, engaging them as stakeholders in the initial intervention development, and partnering with existing networks and centers can enhance the viability of dissemination activities. Potential dissemination champions and partnerships contexts are numerous; they may include public schools, colleges and universities, workplace wellness initiatives, health and advocacy organizations, public health departments, clinical practice groups, media partners, and other stakeholders engaged with the health issue at hand.

Fourth, researchers should design messages for scalable adaptation. This design approach is consistent with the social marketing literature indicating the importance of developing appropriate packaging of intervention materials and testing them with potential partners through different means. As we noted, researchers may address this second concern of “adaptability” by identifying modifiable message components for future repackaging to other audiences. Researchers also should identify localizable components; for example, partners can help locate statistics, sources (e.g., a recognizable actor known to the target population), local graphics, visual images, and b-roll to assist researchers in adapting an intervention for dissemination. The main point is that researchers should consider which original messages elements can be adapted to reach new audiences and then work to show potential partners how these messages could be adapted to fit the needs of the new audience.

CONCLUSION

The aim of our article was to illuminate effective strategies for health communication scholars disseminating evidence-based interventions to secondary audiences. The “1-2-3 Pap” intervention provides a clear case of how a highly targeted evidence-based intervention can subsequently be disseminated to different audiences and contexts. To enhance the reach and effectiveness of interventions designed for dissemination, health communication scholars involved in developing interventions must build dissemination strategies into their research designs. To do so requires careful planning and partnership development early in the intervention and message design process. One important lesson we learned is that there is an unavoidable tension between maintaining intervention fidelity and adapting interventions to be relevant to other audiences. We offer this lesson not to discourage others

from working to disseminate their interventions to different audiences, but to encourage them to acknowledge this tension and to develop a strategy for addressing it early on in order to extend the reach and potential effectiveness of a carefully planned and developed intervention.

Acknowledgments

FUNDING

This publication was supported by cooperative agreement number 1U48DP001932-01 from the Centers for Disease Control and Prevention. The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Appendix

APPENDIX

REDESIGN CONSIDERATIONS FOR "1-2-3 PAP" DISSEMINATION TO NEW AUDIENCES

Original "1-2-3 Pap" intervention (Eastern Kentucky)	Kentucky (Statewide)	West Virginia	North Carolina
User: Organization or entity delivering the intervention			
University of Kentucky Rural Cancer Prevention Center (RCPC)	Kentucky Public Health Research Network (KePHRN), identified through National Coordinating Center PBRN meeting	West Virginia Immunization Network (WVIN), identified through interpersonal networking and "1-2-3 Pap" paper presentation at the WVIN annual conference	North Carolina Public Health Practice-based Research Network (NC PBRN), identified through National Coordinating Center PBRN meeting
Context for dissemination: Specifically, the different types of support for dissemination of the intervention			
Funding support	—	Additional funding support from WVIN	—
RCPC			
Message/video design support	—	—	Additional message (re)design support from NC PBRN and East Carolina University health communication partners
RCPC			
Logistical support (e.g., coordinating talent and resources for filming, identifying practice partners, distributing video, etc.)	Additional logistical support from KePHRN	Additional logistical support from WVIN	Additional logistical support from NC PBRN
RCPC			
Source: Talent used in video			
Role: Moderator	—	—	—
Talent type: Local Appalachian KY news anchor	—	—	Talent type: Replaced with a North Carolina public news anchor
Role: Health educator to deliver the educational messages	—	—	—
Talent type: Local Appalachian KY nurse	Talent type: Added Western KY health educator	Talent type: Retained Western	Talent type: Substituted local

Original "1-2-3 Pap" intervention (Eastern Kentucky)	Kentucky (Statewide)	West Virginia	North Carolina
		KY health educator and local Appalachian KY nurse from "1-2-3 Pap" Kentucky version	North Carolina nurse for local Eastern KY nurse
Role: Patient models for young adult HPV vaccination	—	—	—
Talent type: Local Appalachian KY young women (selected from target population)	Talent type: Added young female actors to represent a broader, more diverse KY population	Talent type: Retained broader young female actors from "1-2-3 Pap" Kentucky version who also represented a broader, more diverse WV population	Talent type: Substituted young female actors to represent a broader, more diverse NC population
Role: Granddaughter of cervical cancer victim	—	—	Role: Substituted an adult cervical cancer survivor
Talent type: Local Appalachian KY female storyteller depicting a "cancer burden narrative" on the importance of HPV vaccination for primary prevention to reduce the burden of cervical cancer in her community	—	—	Talent type: Local NC female storyteller depicting a "cancer burden narrative" on the importance of HPV vaccination for primary prevention to reduce the burden of cervical cancer in her community
Content of messages			
Statistics and graphics Targeted to Eastern KY audience demographics and psychographics	Modified statistics and graphics to retarget to entire KY population	Modified statistics and graphics to retarget to entire WV population	Modified statistics and graphics to retarget to entire NC population
Educational messages Targeted to audiences of young women in Eastern Kentucky who had already received dose 1; also included messages about risks of HPV and HPV-related harm, benefits of vaccination and Pap tests, necessity to complete the vaccine series, motivation to complete the vaccine series, enhanced self-efficacy for series completion, and information for overcoming obstacles to series completion	Replaced message about receiving doses 2 and 3 with a message promoting initiation of the HPV vaccine series (i.e., dose 1) today.	—	Added a conversational style of message delivery to deliver shorter messages with identical cervical cancer prevention content
Cues to action Recommended follow-up with healthcare provider to receive doses 2 and 3 of the HPV vaccine and regular Pap tests	Replaced message about receiving doses 2 and 3 with a message promoting initiation of the HPV vaccine series (i.e., dose 1) today. Retained cues to receive all three doses of the HPV vaccine series.	Retained cues to action modified in "1-2-3 Pap" Kentucky version.	Retained cues to action modified in "1-2-3 Pap" Kentucky version.
Medium: Delivery method and location/context where video was viewed			
Eastern KY women received dose 1 of the HPV vaccine series at a clinic or health fair and then were randomized to receive the DVD intervention or usual care follow-up.	KePHRN offered local health departments (n = 18) three delivery method options:	WVIN provided video distribution and did not control the delivery method. Practices and providers	NC PBRN offered local health departments (n = 28 jurisdictions, 33 counties) the three delivery method

Original "1-2-3 Pap" intervention (Eastern Kentucky)	Kentucky (Statewide)	West Virginia	North Carolina
	(1) screening the video in their clinics (mirroring original delivery method); (2) playing the video on a loop in the health department lobby or waiting room; and (3) posting a video to health department websites and directing traffic to the website via printed materials, social media, and interpersonal communication.	reported screening the video in their clinics before and after dose 1 of the vaccine, and playing the video in a loop.	options provided in "1-2-3 Pap" Kentucky dissemination.

Note. Based on Green, Ottoson, Garcia, and Hiatt's (2009) knowledge dissemination framework; "—" means no changes were made to this part of the video for adaption to the new audience. Researchers worked with the partners to determine modifications. The goal of using these terms is to delineate the relationship between the adaptations and the original intervention, and each verb serves to describe the action taken by each implementing entity to adapt the original intervention (e.g., *modify* the intervention, *replace* elements of the intervention).

REFERENCES

Bekemeier B, Chen ALT, Kawakyu N, Yang Y. Local public health resource allocation: Limited choices and strategic decisions. American Journal of Preventive Medicine. 2013; 45:769–775. [PubMed: 24237921]

Bernhardt JM, Mays D, Kreuter MW. Dissemination 2.0: Closing the gap between knowledge and practice with new media and marketing. Journal of Health Communication. 2011; 16(suppl. 1):32–44. [PubMed: 21843094]

Berwick DM. Disseminating innovations in health care. Journal of the American Medical Association. 2003; 289:1969–1975. [PubMed: 12697800]

Brownson, RC.; Dreisinger, M.; Colditz, GA.; Proctor, EK. The path forward in dissemination and implementation research. In: Brownson, RC.; Colditz, GA.; Proctor, EK., editors. Dissemination and implementation research in health: Translating science to practice. Oxford; New York, NY: 2012. p. 498-508.

Brownson RC, Jacobs JA, Tabak RG, Hoehner CM, Stamatakis KA. Designing for dissemination among public health researchers: Findings from a national survey in the United States. American Journal of Public Health. 2013; 103:1693–1699. [PubMed: 23865659]

Cohen DJ, Crabtree BF, Etz RS, Balasubramanian BA, Donahue KE, Leviton LC, Green LW. Fidelity versus flexibility: Translating evidence-based research into practice. American Journal of Preventive Medicine. 2008; 35(5 suppl.):S381–S389. [PubMed: 18929985]

Cohen EL, Head KJ. Identifying knowledge–attitude–practice gaps to enhance HPV vaccine diffusion. Journal of Health Communication. 2013; 18:1–14.

Cohen, EL.; Vanderpool, RC.; Crosby, RA.; Noar, SM.; Bates, W.; Collins, T.; Casey, B. 1-2-3 Pap: A campaign to prevent cervical cancer in Eastern Kentucky. In: Dutta, MJ.; Kreps, GL., editors. Reducing health disparities: Communication interventions. Peter Lang; New York, NY: 2013. p. 158-177.

Crosby RA, Casey BR, Vanderpool R, Collins T, Moore GR. Uptake of free HPV vaccination among young women: A comparison of rural versus urban rates. Journal of Rural Health. 2011; 27:380–384. [PubMed: 21967381]

Dearing JW, Maibach EW, Buller DB. A convergent diffusion and social marketing approach for disseminating proven approaches to physical activity promotion. American Journal of Preventive Medicine. 2006; 31(4, suppl.):11–23.

Dusenbury L, Brannigan R, Hansen WB, Walsh J, Falco M. Quality of implementation: Developing measures crucial to understanding the diffusion of preventive interventions. Health Education Research. 2005; 20:308–313. [PubMed: 15522898]

Fisher, JD.; Fisher, WA.; Shuper, PA. The information-motivation-behavioral skills model of HIV preventive behavior. In: DiClemente, RJ.; Crosby, RA.; Kegler, MC., editors. Emerging theories in health promotion practice and research. 2nd ed.. Jossey-Bass; San Francisco, CA: 2009. p. 21-63.

Fisher, WA.; Fisher, JD.; Harman, J. The information-motivation-behavioral skills model: A general social psychological approach to understanding and promoting health behavior. In: Suls, J.; Wallston, KA., editors. Social psychological foundations of health and illness. Blackwell; Malden, MA: 2003. p. 82-106.

Glasgow RE, Emmons K. How can we increase translation of research into practice? Types of evidence needed. Annual Review of Public Health. 2007; 28:413–433.

Green LW, Ottoson JM, Garcia C, Hiatt RA. Diffusion theory and knowledge dissemination, utilization and integration in public health. Annual Review of Public Health. 2009; 30:151–174.

Head KJ, Cohen EL. Young women's perspectives on cervical cancer prevention in Appalachian Kentucky. Qualitative Health Research. 2012; 22:476–487. [PubMed: 22068039]

Head KJ, Vanderpool RC, Mills LA. Health care providers' perspectives on low HPV vaccine uptake and adherence in Appalachian Kentucky. Public Health Nursing. 2013; 30:351–360. [PubMed: 23808860]

Hecht ML, Miller-Day M. “Applied” aspects of the Drug Resistance Strategies Project. Journal of Applied Communication Research. 2010; 38:215–229. [PubMed: 20711485]

Mays GP. Leading improvement through inquiry: Practice-based research networks in public health. Leadership in Public Health. 2011; 9:1–20.

Mays GP, Hogg RA, Castellanos-Cruz DM, Hoover AG, Fowler LC. Public health research implementation and translation: Evidence from practice-based research networks. American Journal of Preventive Medicine. 2013; 45:752–762. [PubMed: 24237919]

Mays GP, Smith SA, Ingram RC, Racster LJ, Lamberth CD, Lovely ES. Public health delivery systems: Evidence, uncertainty, and emerging research needs. American Journal of Preventive Medicine. 2009; 36:256–265. [PubMed: 19215851]

Meissner HI, Glasgow RE, Vinson CA, Chambers D, Brownson RC, Green LW, Mittman B. The U.S. training institute for dissemination and implementation research in health. Implementation Science. 2013; 8(1):1–9. [PubMed: 23279972]

Merrill JA, Carley KM, Orr MG, Jeon CY, Storrick J. Patterns of interaction among local public health officials and the adoption of recommended practices. Frontiers in Public Health Services and Systems Research. 2012; 1(1) article 6.

Montaño, DE.; Kasprzyk, D. Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In: Glanz, K.; Rimer, BK.; Viswanath, K., editors. Health behavior and health education: Theory, research, and practice. 4th ed.. Jossey-Bass; San Francisco, CA: 2008. p. 67-96.

Rabin BA, Brownson RC, Haire-Joshu D, Kreuter MW, Weaver NL. A glossary for dissemination and implementation research in health. Journal of Public Health Management and Practice. 2008; 14:117–123. [PubMed: 18287916]

Rogers, EM. Diffusion of innovations. 4th ed.. The Free Press; New York, NY: 2010.

Scutchfield FD. A national research agenda for public health services and systems. American Journal of Preventive Medicine. 2012; 42(5, suppl. 1):S72–S78. [PubMed: 22502928]

Slater JS, Finnegan JR Jr. Madigan SD. Incorporation of a successful community-based mammography intervention: Dissemination beyond a community trial. Health Psychology. 2005; 24:463–469. [PubMed: 16162040]

Sosnowy CD, Weiss LJ, Maylahn CM, Pirani SJ, Katagiri NJ. Factors affecting evidence-based decision making in local health departments. American Journal of Preventive Medicine. 2013; 45:763–768. [PubMed: 24237920]

Valente, TW. Social networks and health: Models, methods, and applications. Vol. chap. 11. Oxford University Press; Oxford, UK: 2010.

Vanderpool RC, Brownson RC, Mays GP, Crosby RA, Wyatt SW. A partnership of two U.S. research networks to improve public health. American Journal of Preventive Medicine. 2013; 45:745–751. [PubMed: 24237918]

Vanderpool RC, Cohen EL, Crosby RA, Jones MG, Bates W, Casey BR, Collins T. “1-2-3 Pap” intervention improves HPV vaccine series completion among Appalachian women. Journal of Communication. 2013; 63(1):95–115. [PubMed: 26560123]

Viswanath K, Kreuter MW. Health disparities, communication inequalities, and e-health: A commentary. American Journal of Preventive Medicine. 2007; 31(suppl. 5):S131–S133. [PubMed: 17466818]