An Analysis of Attitudes and Barriers to HIV Testing in Vermont: Implications for a State-wide Media Campaign

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The CDC recommends that people get tested regularly for HIV in order to promote early detection. Only about 45% of the population has been tested (Maugh, 2010). The Health Department of Vermont is interested in increasing the rate of testing for Vermont citizens. This paper presents a review of literature on testing barriers, a summary of previous campaign work on HIV and the results of a set of focus group interviews conducted with Vermont citizens. From the focus group data, there were 7 factors that comprised people’s attitudes toward HIV and HIV testing: stigma, location and anonymity of testing, physician initiation, type of test, lack of knowledge, financial considerations and normalizing the behavior. The implications of these results are discussed. Possible campaign strategies are presented that incorporate recommendations from the literature and focus group results.

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Each year, 18,000 Americans perish from AIDS, or acquired immune deficiency syndrome. Approximately one million Americans are infected with the human immunodeficiency virus (HIV), and of those, about 20% are unaware they harbor the virus (Centers for Disease Control, 2011). HIV is particularly difficult because, although AIDS can develop relatively quickly, the median time between infection and the onset of AIDS is 11 years (CDC, 2010). The Centers for Disease Control (CDC) set testing and linking infected people to care as their top goals in their HIV Prevention Strategic Plan (CDC, 2007). Early detection is critical for the long-term health prospects of individuals with the virus (Crum et al, 2006), and early treatment is linked to a lower incidence of passing the virus to a partner (Cohen et al, 2011). Regular HIV screening and detection for all but the lowest-risk individuals leads to both health and financial benefits not only for the individual, but for society in general (Paltiel et al, 2005). Each new AIDS case costs approximately $360,000 over the individual’s lifetime, and from 1991 to 2006, testing has prevented more than 350,000 infections and saved more than $125 billion in medical costs (CDC 2011).

Vermont is a small, rural state. Nevertheless, it is not untouched by the AIDS epidemic. According to the Vermont Department of Health (VDH), there are up to 660 HIV-infected Vermonters (Vermont Department of Health, 2004). At an estimated cost of $360,000 per patient, lifetime care for these individuals could add up to nearly $240 million. For comparison, consider that Vermont’s median household annual income is $50,619 (Kaiser Family Foundation, 2011), and the state’s total yearly healthcare expenditure is approximately $4 billion (Vermont Health Care for All, 2009). Clearly, for both quality-of-life and financial reasons, early detection of the virus is critical.

There are 34 free testing sites in Vermont, meaning that distance is not a major obstacle to testing. Of these, 24 provide anonymous testing; the remaining 10 provide confidential testing. “Anonymous” testing means that a patient’s name is not linked to a medical file or insurance. Rapid testing produces results in about 20 minutes, but results are considered preliminary only. The oral swab test is available, although blood tests are considered more accurate. Should an individual test positive for the virus, it is illegal for the person’s insurance company to drop coverage; and if the individual does not have health insurance, treatment costs are covered by the state (H. Hauser, personal communication, October 28, 2011).

Even though the CDC recommends that getting an HIV test should be as routine as a cholesterol screening, only about 45% of Americans have been tested (Maugh, 2010), and this includes tests in cases wherein the patient has not specifically requested an HIV test, such as blood donation or pregnancy. In 2009, the Vermont Department of Health and the Vermont HIV/AIDS Community Planning Group conducted a statewide needs assessment. This report concluded the following: Many Vermonters are unaware that testing is free in the state; they may have access to medical care but do not seek testing because they do not identify themselves as part of a group at risk for infection. They identify themselves as members of high-risk groups, but avoid testing due to concerns regarding stigmatization. They are under the care of a doctor who does not routinely discuss or offer HIV testing. They lack access to health care (Vermont HIV Prevention, 2010).

The Vermont Department of Health (VDH) therefore seeks to develop messaging to encourage different groups of Vermonters to obtain HIV testing, either for free through a testing center or through their insurance with their regular doctor. These groups include: the general Vermont population; men aged 13-24 who have sex with men (MSM); and women aged 13-24 who have sex with men. This paper presents the results of focus group interviews and how this data could inform a mass media campaign promoting HIV testing. Formative research involved carefully analyzing the literature for barriers to testing, reviewing relevant health-related theory, and conducting a series of focus group interviews with cross-sections of Vermont citizens and key informants. The next section presents the literature on barriers to testing.

**Literature Review**

*Factors Involved in the Decision to Test*

The research on factors related to the decision to obtain an HIV-test focus on issues including stigma (Gilbert & Walker, 2010; Valdiserri, Holtgrave, & West, 1999), anonymity or privacy (ldiserri, Holtgrave, & West, 1999), and demographic factors (Irwin, Valdiserri, & Holmberg, 1996).

Stigma is defined as “a simplified, standardized image of the disgrace of certain people that is held in common by a community at large” (Smith, 2007, p. 464). Stigma is a major consideration for people who suspect they may be HIV-positive. Despite the health risks of having HIV and not being treated, stigma can be a strong enough force to prevent people from seeking the test (Gilbert & Walker, 2010; Valdiserri, Holtgrave, & West, 1999). Yet, there is also evidence that if the HIV test is part of a suite of tests, testing rates go up even when people claim not to fear stigmatization (Young & Bendavid, 2010).

Anonymity in terms of HIV-testing is the strict adherence to withholding names from test results. Anonymity appears important across all age groups, and, when compared to confidentiality, is likely a factor in boosting testing rates (Valdiserri, Holtgrave, & West, 1999). Thus, promoting anonymity in testing is recommended (Noar, Palmgreen, Chabot, Dobransky, & Zimmerman, 2009). However, if confidentiality is the best patient protection available, then emphasizing the idea that no one knows but you and your health practitioner is still helpful (Cheng, Savageau, Sattler, & DeWitt, 1993).

Adolescents appear to be concerned about with whom they receive the test, with more than half opting to be tested by someone other than their regular physician (Cheng, Savageau, Sattler, & DeWitt, 1993; Rawitscher, Saitz, & Friedman, 1995). Across all age groups, testing levels increase, along with conversation and care, when a physician initiates the conversation (Samet, Winter, Grant & Hingson, 1997); and when testing is presented as routine (Mimiaga et al., 2008). Acceptance rates are higher with physicians than with other health practitioners, and increasingly, doctors are more likely to discuss HIV testing with their patients (Valdiserri, Holtgrave, & West, 1999). When the test requires patients to reveal details regarding their sexuality, refusal rates rise (Irwin, Valdiserri & Holmberg, 1996).

There are few straightforward predictors of who will and will not be open to testing, no matter what the risk level is. In general, MSM who are connected to a solid network of advocacy and social contacts test more, as do pregnant women (Irwin, Valdiserri, & Holmberg, 1996). However, some high-risk patients do not wish to know their status (Kellerman et al., 2002). Paradoxically, better therapies may be affecting both the decision to test in a positive way (because of raised efficacy) and a negative way (by lessening a patient’s worry) (Irwin, Valdiserri, & Holmberg, 1996).

*Health Behavior Theories in HIV Testing Campaigns*

Theories of persuasion and behavior change have been utilized as a framework to create health campaigns. This section is organized by relevant theory to understand HIV-testing attitudes and how previous media campaigns have used the theory as a framework.

*Health Belief Model.* Vulnerability is a key aspect of the HBM. Researchers have relied upon this model to affect change in HIV-related campaigns. Individuals’ sense of their own vulnerability is an important determinant in whether or not they sought HIV testing (Kellerman et al., 2002). Adolescents who believe they are vulnerable to HIV infection due to past behaviors, or who do not believe condoms are sufficient protection against the virus, are more likely to seek out an HIV test than their peers. Teens who felt that there was a better than even chance they would contract HIV in their lifetimes were not more likely to be tested, suggesting the possibility that they felt powerless over their fate (Samet, Winter, Grant & Hingson, 1997). The HBM was used successfully in a multi-city campaign to encourage people to get an HIV test, relying on messaging emphasizing personal vulnerability and the benefits of taking action (Fraze et al., 2009). And, the use of the HBM to create an AIDS campaign to increase teens’ concepts of personal risk and simultaneously reduce the credibility of their excuses showed a successful outcome as well (de Vroome et al., 1991).

*Theory of Planned Behavior/ Theory of Reasoned Action.* The theory of planned behavior has been utilized as a framework in previous research related to HIV testing. In a Hong Kong survey among MSM, beliefs about norms, intention, attitudes and control regarding testing were found to correlate with the TPB to predict the incidence of voluntary HIV testing and counseling (Gu, Lau, & Tsui, 2011). These beliefs include a concern over contracting or transmitting HIV; confidentiality if not anonymity; having the test performed as part of a routine exam; and a close relationship between testing and counseling. The TPB/TRA approach has led to some notable success. In a multi-city campaign to promote HIV testing, health communicators emphasized the concept of personal behavioral control and used messaging to support individuals’ abilities to engage in the desired testing behavior (Fraze et al, 2008).

*Social Cognitive Theory.* Researchers found that, interestingly, 90% of safer sex websites neglected to discuss social norms regarding better health practices (Noar, Clark, Cole, Lustria, 2006). Other studies found success using various tenets of the theory. For instance, normalizing the process of HIV testing can help dissolve the potential stigma surrounding the virus (Mimiaga et al. 2010). And survey respondents prefer to see people in ads that resemble themselves (McOwan, Gilleece, Chislett & Mandalia, 2002; Mimiaga et al., 2010). Myhre and Flora (2000) note a stark difference between an early Australian AIDS campaign featuring the grim reaper and several SCT-focused studies that concentrated on behavior change, such as the normalizing of condom use. Whereas the Grim Reaper campaign frightened people into inaction and divisiveness, the SCT-informed campaigns worked to increase dialogue, making an open discussion of the issue (Myhre & Flora, 2000).In a more comprehensive campaign that sought to raise fear and efficacy levels, a new norm was successfully created around the purchase and use of condoms as protection against HIV (Agha, 2003).

*Transtheoretical Stages of Change Model (TTM).* The stages of the TTM provide an intriguing option for changing health behavior, arguing that tailoring messages to particular stages in an individual’s thinking may help move this individual along the path to better health (Devos-Comby & Salovey, 2002). Irwin, Valdiserri and Holmberg (1996) found that, among certain groups, individuals’ personal assessment of risk predicted willingness to be tested; however, greater risk did not in all cases equal greater willingness to test. The researchers found that being ill and suspecting one might have HIV was not a strong predictor of a desire to test, whereas being pregnant was (Irwin, Valdiserri, & Holmberg, 1996).

*Extended Parallel Process Model.* The Extended Parallel Process Model concerns the relationship between fear and efficacy (Witte, 1992). When a person perceives high severity and susceptibility to a disease, he or she experiences fear. This fear should result in a careful examination of a health message in terms of self-efficacy and response efficacy. If efficacy is high, the result is the person will engage in danger control behaviors (e.g., carrying out the recommended response). If efficacy is low, fear control behaviors will result (e.g., defensive processing of the message). Researchers studied emotions such as puzzlement, happiness, surprise, and sadness, and attempted to link them to HIV/AIDS message acceptance (Dillard, Plotnick, Godbold, Freimuth & Edgar, 2011). They concluded that fear was the most powerful motivator. They found that other affects could also motivate (surprise, sadness) although to a lesser extent; that some affects (puzzlement, anger) had a negative effect on message acceptance; and that one affect (happiness) had no clear relationship to message acceptance (Dillard, Plotnick, Godbold, Freimuth & Edgar, 2011).

Fear must be used carefully, however, or it can divide and stigmatize (Myhre & Flora, 2000). Fear can motivate intentions better than actions if the message is lacking the careful integration of threat. Fear also should be understood in terms of loss-frame and gain-frame message design; in some cases, emphasizing what a person will lose if he/she does not undertake a behavior is more effective than emphasizing what the person will gain if he/she does (Devos-Comby & Salovey, 2002).

Elements of the health belief model, transtheoretical model, and elaboraton likelihood model can all be found in a Massachusetts study of adolescents and HIV testing. Samet, Winter, Grant and Hingson (1996) identified several factors that were positively associated with the decision among adolescents to be tested, including sexual history, interactions with teachers and doctors, and beliefs about condom effectiveness. More important, though, than the theories, is the idea that states, stages and beliefs overlap, with the point being that the most effective communication is likely that which is personalized to the greatest extent (Samet, Winter, Grant, & Hingson, 1996).

*Ad Theory.* There is a cliché in advertising regarding ads that invoke negative responses. The saying is, “Yes, but you remembered the ad, right?” While this may be true, it does not lead to a consumer embracing the brand (Batra & Ray, 1986; MacKenzie, Lutz & Belch, 2006). Evoking Machiavelli, an ad does not have to be loved to be effective. If it cannot be loved, it should be feared, but never hated. So, an ad simply must evoke a non-negative, emotional response that appeals to the consumer (Hafstad, Aaro, & Langmark, 1996). This means that a range of emotions can be evoked, including even fear, just as long as the ad does not arouse, for instance, disgust or anxiety. This positive affective response, in turn, is more of a determinant of attitude toward the product than logical arguments.

 This review of literature presented previous research on beliefs and attitudes related to HIV-testing, and campaign strategies based on theory that help inform health campaign development. Based on this review of literature, the following research question was posed:

RQ1: What are Vermonter’s attitudes and beliefs about HIV and HIV-testing?

**METHOD**

*Participants.* A set of seven focus group interviews were conducted with a total of 65 Vermont citizens. The focus groups were held in classrooms, places of business, and community rooms. There were between five to 12 individuals per group. In each group, about half were men and half were women. (The exception to this was that we split college class into two groups by gender). Ages ranged from approximately 20 to mid-60’s.

In addition, seven individual interviews were conducted with key informants who fall into the following groups: clinicians, HIV/AIDS activists, social workers, people living with HIV, and public health officials. These people were recruited through personal contacts (nurse, HIV-positive male); and through cold calls to social services organizations (including gay and HIV-support programs) and the clinical headquarters for treatment of Vermont’s HIV/AIDS population.

*Data Collection.*  Participants for the focus groups were recruited for participation in a study on sexual health. Participants were recruited both through personal networks and cold calls. Key contact people included a former University of Vermont outreach coordinator, a manager at the Greater Burlington YMCA, youth counselors at a local social services agency, and a college professor.

Focus group interviews and the key informant interviews were conducted by members of the research team. A general set of focus group guidelines were constructed with a set of semi-structured interview questions that tap into attitudes toward HIV and HIV-testing. Each focus group and key informant interview was recorded and transcribed. The data resulted in **XX** pages of text.

*Data Analysis*. A content/thematic analysis was conducted on the focus group interview data.

The analysis of the transcripts was conducted using a grounded approach (Corbin & Strauss,1990; Strauss & Corbin, 1994). A constant comparative method of the data was followed. This process involved going back and forth comparing each utterance to the emergent themes and checking and revising the interpretation as needed (Glaser & Strauss, 1967). This methodology involves reading and rereading the transcript data with the goal of becoming immersed in the meaning structures expressed and examining the contexts and conditions under which themes and subthemes occur (Colvin, Chenoweth, Bold, & Harding, 2004).

**Results**

The results of the focus group interviews provided insight into the relevant attitudes and beliefs of the citizens of Vermont and key informants about HIV and HIV-testing. There were seven themes that emerged from the data, including: stigma, location and anonymity of testing, physician initiation, type of test, lack of knowledge, financial considerations and normalizing the behavior.

*Stigma*. Across all ages, genders and orientations, stigma was a significant issue discussed in the focus groups and it expressed itself in ways both obvious and subtle. One focus group respondent reported, *“Once you go and you do (test), you find out that you test positive. It’s documented down. Granted, it’s supposed to be private. But, it’s still the fear of it being in writing out there and there is going to be the medical field that will have access to that.”* Another focus-group participant stated: *“And it’s not something you think about unless there’s an actual problem attached to that. Or like, or if you did something really, really stupid and you need to correct it. But like unless you, like have a conscious idea that there’s an issue here, like most people aren’t going to just go get tested or even ask about where to go get tested, just because of that stigma.”*

*Location of testing and anonymity.* The location of testing and whether it was anonymous or not was a topic that emerged in the focus group data. While it is important to note that some individuals preferred to visit their own doctor for a test, the majority expressed that they would prefer to go to a health center where they did not know their practitioner. “*If I'm going to be the one to initiate it, I'd like that level of anonymity. Going somewhere where I don’t know them, I’ve never seen them before, they’ve never seen me, you know, I don’t know if you have to write your name down or anything like that … But if I were to do it, I’d want that you don’t know me, I don’t know you.”*

*Physician issue framing*. The framing of the subject of HIV-testing was another topic discussed in the focus group interviews. In other words, because HIV is a sensitive topic, how a physician asked a patient if he or she wanted a test would influence the decision to get a test or not. Focus group members stated that if the conversation were started by their physician, in an entirely neutral fashion (that is, without hinting at issues of orientation, drug use or sexual habits), then they would be very likely to get an HIV test. “*I think it’s almost more convincing if I was in a physical and a doctor said “you know you should really get tested for HIV, you’re 25 years old, you’re at a high risk age and you’ve never been tested, it’s part of your insurance. You should consider doing this. It can’t hurt, it can only help you.” And I think I’d be much more comfortable already being at the doctor’s office than taking the step to go and making a day trip out of going to get tested for HIV.”* The other issue, however, is that often physicians do not start the conversation at all. Two respondents reported asking their physician for a test and being told they did not need it.

*Type of test.* The types of HIV-tests available was a topic that emerged in the focus group data. There appeared to be a segment of the data that was concerned about needles and demonstrated a preference with the oral swab test. “*My biggest phobia in the world is needles. So, I know there’s a lot of people in my family that have the same phobia, so um, if you could tell somebody that they were in and out, I mean yeah I have my shots when I go get my physical every year or two, you know, get blood drawn, but if it was simply that easy to be in and out 20 minutes cotton swab, or even something I could take myself at home and mail it in or something like that, oh yeah, I’d be all over that opposed to the needle.”*

*Lack of knowledge.* A basic understanding of the progression of HIV to AIDS and the current treatments and impact of those treatments on one’s duration and quality of life appeared to be lacking in the focus group participants. For instance, people generally regard it as a virus that will eventually kill the infected person. This is not the case, although at this point, HIV patients do need to be on medication for life. *“I mean there are ways that people live with it. Right? I mean I’m pretty sure I’ve heard of, besides Magic Johnson, there are a lot of people who survive. This is a big one that needs to be broken down. Some people don’t know that. They are afraid that finding out may be the end of their life.”*

Focus groups universally were surprised to learn that HIV takes, on average, 11 years to turn into AIDS. This brought up the idea that relationships long past could be relevant to their current health. **[sample quote?]**

*Financial considerations.* Money was a significant concern for focus group members, including co-pays, insurance rates, waiting periods between coverage, additional tests, time, deductibles and other cost-related issues. “*I go to the doctor; that costs money; I take the test, that costs money; finding out from my insurance what do you guys cover for HIV testing and coverage and then them saying we cover this, three months later, oh we can no longer cover you. Um, I think there's a huge, huge fear factor with insurances dropping people these days, that they’re not, I'm not going to be able to afford my payments anyways, and now you guys are going to drop me, so now I really can’t afford them.”*  Another participant expressed a similar sentiment: *”I mean like yeah I could go to a free clinic and there’s a chance I’d test positive; where do I go from there? Who’s going to pay for you know however many prescriptions I need on a daily basis? Where do I go to get help for those? Um, you know I think that’s big.”*

*Normalizing the behavior.* The idea of normalizing the behavior of getting an HIV-test appeared in the focus group data. Normalizing the data simply means that HIV testing should be a part of regular health screenings so it eliminates the choice for patients. As one participant stated, “**XXXXXXXXXX**.”

**Discussion**

This study presented the results of an analysis of focus group interviews on citizens of Vermont and interviews with key informants to determine their attitudes and beliefs about HIV and HIV testing. Subsequently, a media campaign is being developed, based on the analysis and results of this research and the literature on HIV campaigns. This section discusses these findings in relation to possible campaign strategies. Based on this analysis, there are four main issues for VDH’s messaging to address: Stigma; a sense of vulnerability; information; and the process of normalizing behavior. These are, perhaps unsurprisingly, all related. In different proportions, all these issues are relevant to our target groups.

The stigma associated with being HIV-positive has been well documented in the literature (Smith, Rossetto & Peterson, 2008). The present focus group data confirms this documented fear of the repercussions of being HIV-positive and the disclosure to others. The literature suggests that a dialectical tension exists with the decision to disclose or not to disclose one’s HIV-positive results to others. In other words, while one might want to disclose in order to obtain social support, there is also the fear of rejection and stigmatization (Smith, Rossetto & Petterson, 2008). This tension is carefully considered in deciding what to disclose to whom. As indicated by the focus group data, HIV is an embarrassing virus to harbor because of assumptions from others regarding how one contracted it and the fear of spreading it. While it might be unreasonable to assume that a media campaign can change this perception, it is within the realm of possibility that a campaign can lessen stigma around the idea of being tested for HIV as part of a healthy lifestyle.

As new clinical studies about HIV helps expand our knowledge of the disease, it is not surprising that the current focus group data suggests that the participants were unaware of significant improvements in the understanding and treatment of HIV. Focus group participants were unaware that HIV-positive individuals can live to the same age as they might without the disease (albeit they are taking medications). They did not know that the average “incubation” time for HIV can turn into AIDS is currently 11 years (**CITE**). Given the lack of knowledge of current research findings by the public, it is not surprising that the perceptions of the severity of HIV as a disease appears to be as strong as when HIV was considered a deadly disease (e.g., during the 80s and 90s). Given the segmented populations for this study, the information presented in a campaign should be tailored to those demographics.

General knowledge is not enough to change behavior (Myhre & Flora, 2000; Sherr, 1987) but specific knowledge targeted to narrow groups can be helpful (McOwan, Gilleece, Chislett & Mandalia, 2002). Specific appeals targeted to narrow groups can be effective as well (Slater, 2006). In the MSM group, information will likely comprise most of the message. This information concerns the where, how and at what cost testing is available. In the group of young women who have sex with men, relevant information includes inducing a sense of vulnerability, and informing them that testing is available and anonymous. For the general population, clinical information on the virus may be more important. Because HIV can be dormant for many years before turning into AIDS, individuals cannot assume that they are safe just because they have been in very few monogamous relationships in the last several years. Given individuals’ concern over stigma, using a fear approach to induce a sense of vulnerability may be one of a very limited number of tools powerful enough to overcome the idea that ignorance is bliss.

Normalizing testing behavior can be accomplished in the offices of primary care physicians. One primary trigger that convinces youth to be tested is a doctor’s recommendation (Futterman et al. 2001). If physicians followed the CDC-recommended approach of offering testing to all sexually active patients, a media campaign would be mostly unneeded. Since this is not happening, then it is worth considering a messaging approach that involves and targets doctors as well as the general population. For instance, a doctor would say in an ad, “You should be tested, and I should be asking you. If I don’t, ask me.” From a norming perspective, two kinds of physicians would be called upon—unknown ones in great numbers; and known ones, such as VDH Commissioner Dr. Harry Chen and former governor and presidential candidate, Dr. Howard Dean. The primary philosophy behind the message would be to normalize the idea of being tested for patients, but the secondary one would be normalizing the idea of suggesting it for doctors.

 *Campaign research and implications*. Previous campaign research has demonstrated the importance of utilizing theories to help educate the public on specific health behaviors. Some of the most widely used theories of behavior change include the theory of reasoned action, social cognitive theory, the health belief model, the extended parallel process model and the transtheoretical stages of change model. Each of these theories provides a framework that can help guide health campaign planners to create well-designed and executed media messages for the public’s consumption. In the case of HIV, the present data suggests that attempting to induce fear may not be the best strategy for obtaining compliance. In order to shift one’s attitude toward HIV testing, the beliefs that the population holds need refining given the concurrent advancements in our understanding of the effectiveness of treatments. **CAN YOU ELABORATE HERE?**

*Limitations*

While our focus groups have proven, in general, uncommonly communicative and insightful, and while we have benefited greatly from the educated, experienced and considered opinions of our key informants, our sample size is relatively small and generalizations about this sample should be done with caution. For example, one of the main surprises in the focus group data was the preference for the oral swab test over venipuncture. In previous research, patients have not expressed a concern about venipuncture (Irwin, Valdiserri, & Holmberg, 1996) so if the oral swab test is not available, a blood test does not seem to be a deterrent. However, in the focus group data, respondents expressed an overall preference for the oral swab versus the blood test. These results should not be generalized but could be anomalies in this specific sample.

*Conclusion*

 This study provided insight into how core attitudes and beliefs about HIV can impede one’s intentions to get tested. The present study supports previous research on stigma and barriers to testing and extends previous research by examining the beliefs and attitudes of a specific population in the United States. Future research needs to be conducted in order to examine the perceptions of the public in relation to new advances that are made. Health campaign designers need to be aware of current clinical study successes in order to best strategize message designs in relation to public awareness.

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