

Perspectives

AIDS Denialism: Conspiratorial Ideation and the Internet

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Presentation of AIDS denialist literature in the media has an important influence on policy-making and public health education. However, the mechanisms by which AIDS denialists use media to carry out their movement and the interdependence between denialists and mass media remain inadequately examined. In this paper, the ways in which the media may sustain the HIV/AIDS denialism in South Africa were analyzed, followed by suggestions for mitigating the negative effects of AIDS denialism. In brief, it appears that modern mass media, especially the Internet, has become a fertile ground for propagating denialist literature by facilitating and empowering three defining features of AIDS denialism: (1) conspiracy ideation, (2) manipulation of fake expertise and (3) selective attack of “bad science.” Regardless of whether AIDS denialism is an organized movement or simply an outlier of the scientific community, a greater understanding of the ways in which AIDS denialists utilize the Internet to sustain their presence may elucidate more effective strategies for reducing the negative impact of science denialism on public health, particularly its influences on public attitude towards the crucial implementation of future HIV/AIDS treatment and prevention services.

INTRODUCTION

Denialism is broadly defined as the “employment of rhetorical arguments to give the appearance of legitimate debate where there is none, an approach that has the ultimate goal of rejecting a proposition on which a scientific consensus exists.”¹ Therefore, denialists often use logical fallacies without “evidence” to sow doubts against sound science to cultivate pseudoscience.² In particular, incorrect statements, including “evolution does not exist,” “preservatives in vaccines cause autism” or “HIV does not cause AIDS” all constitute a type of denialism that we may collectively call science denialism.

Science denialism, when propagated by politicians and rogue scientists, has serious potential to undermine the effectiveness of public and global health educations as well as the implementation of health policies.^{3,4} One example of science denialism is AIDS denialism. In addition to the central argument that HIV does not cause AIDS, other myths, such as HIV is harmless or antiretroviral (ARV) drugs themselves cause death, remain a great impetus behind the AIDS denialists’ challenge against the accuracy and even the existence of HIV testing and treatment.⁵ Claims asserting the lack of scientific evidence behind the cause of AIDS by HIV or even the mode of viral transmission via heterosexual intercourse are also quite common in the AIDS denialist literature.⁶

Indeed, AIDS denialism has compromised HIV treatment and prevention programs, especially in South Africa, a region with the largest number of HIV infection cases in the world since 1980s.⁵ At the surface, AIDS denialism can cause people, even HIV-infected individuals, to reject proven antiretroviral therapy (ART), a combination of potent ARVs that are important to suppress the viral replication, delay disease progression and reduce transmission. Consequently, this effect had prevented governmental agencies and non-governmental organizations (NGOs) from implementing HIV/AIDS programs in high-risk populations.^{3,7,8,9} Moreover, AIDS denialism can also influence politicians on their health-related policy-making. Most notably, during the early 2000s, former South African President Thabo Mbeki and Minister of Health Manto Tshabalala-Msimang publically denied that HIV caused AIDS and opposed funding for the science-based application of ART.^{3,7} Interestingly, it was later shown that his decision behind denying ART distribution programs was partly due to the fallacious materials Mbeki found on the Internet.³ In fact, President Mbeki was so persuaded by online AIDS denialist literature that effective ARTs were completely replaced by unproven application of various alternative therapies using vitamins, music and light—a deleterious recommendation that were included in the 2001 South Africa’s Presidential AIDS Advisory Panel report.¹⁰

Due to the resulting denialism-driven policies in which AIDS was erroneously attributed to poverty and malnutrition instead of a virus,

AIDS denialism in South Africa has been shown to account for hundreds of thousands of preventable cases of AIDS-related deaths as well as several hundred new HIV infections.^{1,9,11} Therefore, AIDS denialism is not only a threat to the public’s understanding of legitimate science, but it is also a public and global health conundrum.¹² In order to solve the science denialism conundrum, one must move beyond the science itself to address the many loopholes through which media, especially the Internet, propagates denialism in the general public and governing body.

THE INTERNET:

THE FREE VEHICLE OF EASILY ACCESSIBLE MISINFORMATION

The Internet has revolutionized the way people communicate and exchange knowledge, including scientific data.¹³ The abundance of information presented freely on the Internet has increased individual freedom to access information regardless of whether that information is accurate. As Klaus Minol and others point out, the Internet has evolved into ‘lay journalism’ and the ‘wisdom of the masses,’ where the quantity of such information is enhanced at the expense of its quality and authenticity.¹³ However, the solution to this problem is not to limit access to information, but rather to educate people in critically evaluating the presented information. Given the potentially damaging consequences of easily accessible misinformation, the Internet thus serves as an important consideration in our effort of tackling AIDS denialism.

Since its appearance in the 1990s, the Internet has not simply served as an advanced data transferring system at universities, but also as the most popular medium of mass communication among various entities from both the ‘licensed elite’ of research institutions and ‘anyone capable of operating a browser.’^{13,14} These entities include established science media organizations, higher research and education institutions, scientific societies, individual scientists, NGOs and, most importantly, laypersons.¹³ A simple Google search for “HIV does not cause AIDS” or “HIV/AIDS cure found finally” generates millions of results, many of which lead directly to denialist information. In fact, several major types of Internet-specific media, including websites in the form of blogs, forums and e-zines, have been shown to play a major role in facilitating the pseudo-scientific debate and opinionated communication among Internet users.^{13,14} As Internet-specific media significantly influence the “interactivity,” “speed,” and “availability” of information in both formal and informal communication between the scientific community and non-scientists, the highly integrated communication by the Internet poses a problem in the public sphere where ‘false’ information is ubiquitous.¹³ In addition to the vocal denialism of public figures, these corners where the Internet communities generate and distribute denialist materials anonymously on behalf of not only the individuals, but also the associated institutions, to the general

public thus become problematic.^{13,14}

In this paper, various forms in which AIDS denialist literature may manifest on the Internet, including e-zines, applications (apps), blogs and forums, will be examined.^{3,4,15,16,17}

E-zines

E-zines are a type of Internet portal in the form of a magazine. The contents of an E-zine include magazine articles, opinions (columns) and interviews with prominent personalities.³ The AIDS denialist movement is fueled in part by Christine Maggiore's "Alive and Well" (<http://www.aliveandwell.org>) and the site moderated by the San Francisco chapter of AIDS Coalition to Unleash Power (ACT UP), an international advocacy group working with people with AIDS. Both of these sites advocate that, "HIV [did] not cause AIDS... [and] AIDS drugs [were] poison."³

Moreover, online magazines also contribute largely to the AIDS denialist movement through journalism. The freelance denialist journalist, Celia Farber, brought AIDS denialism to a climax in Spin and Discover magazine via public influences of her boyfriend, Bob Guccione, who was also the magazine's publisher. In addition to actively promoting that HIV was harmless, she erroneously denied that HIV caused AIDS in Harper's magazine multiple times, helping form the public's misconceptions of HIV/AIDS during the 1990s. One of her most controversial articles in this publication was the report "Out of Control. AIDS and the corruption of medical science" in which she, a non-scientist, vocally discredited scientific institutions, scientists and the science behind HIV, including ART effectiveness, as irresponsibly falsified.¹⁸

Under the similar anti-scientific ideology of science denialism, recent emerging websites, such as the World News Daily Report (<http://worldnewsdailyreport.com>), indirectly fuel information that could contribute to the sustenance of science denialism in the name of free-market entertainment. Although it is not necessarily the responsibility of the news sources to disclose the satirical nature of the website, its potentially deleterious effect becomes obvious when the conspiratorial contents are widely shared among people around the globe without the appropriate disclaimer.¹⁵ For instance, an article citing the United Nations and World Health Organization (WHO) on this website that links pregnancy to the flu shot with the erroneous claim that over 4,000 people each year become pregnant after vaccination has been shared over 300,000 times.¹⁹ Regardless of whether or not people shared the article in jest, the detrimental impact of irresponsible distribution of this type of misinformed information on the web becomes problematic with hundreds to thousands of "likes" and "shares" from daily viewers. Even though liking or sharing a page does not imply approval and endorsement of its messages, indirect disseminations of media in this fashion can lead to fallacious information being mistaken for scientific fact, thereby facilitating science denialism.^{19,20}

Apps, Blogs, and Forums

Another feature of the Internet that allows the sustainability of denialism is the unlimited venues for input and output of information. In addition to search browsers and more traditional online publications, these evolving venues include software and applications (apps) that are often free to install and distribute. Even radio and newspapers, which arguably are the most popular forms of media used by the older generations, have been increasingly integrated into the Internet-specific media (e.g. Pandora or Flipboard). Although not yet documented in the literature, apps such as Yik Yak and Reddit, or even Facebook and other social networking apps, have a great potential to be transformed into an interactive 'read-write-web' tool.¹³ Through this transformation, the Internet serves not only to store information, but has also evolved into a platform for mass communication and distribution of knowledge, including the aforementioned denialist literatures, many of which are self-generated and exchanged irrespective of geographical limitation.¹³

Additionally, the Internet can also manifest denialist materials through blogs and forums, such as those monitored by prominent HIV/AIDS denialists, Lawrence Broxmeyer, Henry Bauer and Stephen Davis. These forums and blogs facilitate discussions and even self-publication of denialist materials. For example, articles such as "AIDS: 'It's the bacteria, stupid!,'" "Truth Stranger than Fiction: HIV is NOT the Cause of AIDS" and "FACT #2: The HIV test you took was not a test for AIDS, or even a test for HIV" have been published through these forums.²¹⁻²³ With a great capacity to recruit thousands of readers on the Internet through commentaries on their blogs and forums, active journalists also administer several other denialist websites of their own.^{24,25} Moreover, most of these blogs and forums both in the website-format or integrated apps are often

successful at casting just enough skepticism in the general public to make the readers more easily discredit any statements about HIV/AIDS from mainstream scientists.²⁶

Indeed, the content in most denialist websites, magazines, blogs and forums as well as other forms of Internet-specific media tends to be overwhelming and contain many broken web links. This complicated presentation often portrays medical facts about HIV/AIDS as chaotic and doubtful and thus subject to skepticism. As a result, the scientific facts may be perceived as untrustworthy.¹⁴ Therefore, even though the Internet-specific media created by AIDS denialists does facilitate the exchange of knowledge, it does so in a passive readership fashion in which the information given to the non-expert audience is an altered presentation and misinterpretation of scientific facts.¹³

Additionally, while in the past the media used to tell the audience what to think about, now it has been noted that the audience instead tells the media the subjects that they want to think about.²⁷ Thus, it may not be too hard to appreciate how AIDS denialists could manipulate the information via the Internet to sustain and broaden their influences. That is, it appears that the AIDS denialism media may be controlled by a small number of particular interest groups consisting of vocal AIDS denialists serving as the main generators of denialist materials. Through the Internet, erroneous knowledge is thus able to be manipulated and made widely accessible to the public.¹⁴ In this regard, a small and selective group of individuals, who may or may not be legitimate scientists, become the most significant contributors to a conversation where the audience is no longer engaged, but rather act as passive recipients.¹³

CONSPIRACY IDEATION

Taking advantage of public concerns and anxieties, denialists exploit the easy-to-access-and-distribute features of the Internet to exaggerate while legitimizing discredited arguments and polarized beliefs scientifically, culturally and traditionally through various of Internet-specific media as presented.. In other words, the Internet provides immediate and highly accessible "conspiracist hypotheses" through a process known as conspiracist ideation.^{3,4,15,28}

The hypotheses in conspiracist ideation are often constructed using highly opinionated and false analogies for publication in multiple venues.¹⁵ In so doing, this process further facilitates the denialist media strategy to attract attention and profit while enabling the AIDS denialists to exacerbate the ignorance and misinformation of the general public.^{3,14,15} Consequently, the people behind the denialist media delay the "free development of science" while painting real science and proven consensus as groundless faiths in the aim of profitable marketing.^{3,4,15}

As rejecting sound science may imply the total rejection of scientific research that is often funded by larger institutions of science and medicine, conspiracist ideation tends to emphasize the general public's distrust of governmental authority.³ This effect of conspiracy ideation in AIDS denialism is evident by a survey linking the HIV/AIDS conspiracy belief to negative attitude of condom use among African Americans. Over 40% of the respondents in this study believed that ARVs were part of the experimental process by the government and about 26% reported that AIDS was actually produced in a government laboratory.^{29, 17} Interestingly, a separate study also reported that even though African and Mexican Americans were more likely to uphold HIV conspiracy beliefs than whites, they were found to be more willing to participate in HIV vaccine research.³⁰ HIV conspiracy belief, therefore, may be associated with particular race or ethnic groups, but conspiracy belief alone may not completely explain why AIDS denialism is more prevalent in African and Mexican Americans.³⁰ Nevertheless, it is interesting to note the potential link among the observed conspiracy attitude, public distrust of experimental science and AIDS denialism.

FAKE EXPERTISE

In the US, major figures of the AIDS denialism community include Christine Maggiore, the founder of the AIDS denial organization, Alive & Well AIDS Alternatives, mathematical modeler Dr. Rebecca Culshaw, practitioner Dr. Mohammed Al-Bayati and many others. Most importantly, the movement is traced back to a successful scientist, Dr. Peter Duesberg considered one of the most vocal AIDS denialists.³¹ Dr. Duesberg was a professor of Molecular and Cell Biology at the University of California, Berkeley. His radical view, arguing that all retroviruses were harmless in an article titled "Retroviruses as carcinogens and pathogens:

Expectations and reality,” published in *Cancer Research* in 1987, contributed significantly to the AIDS denial movement. He claimed that the AIDS virus could just be the most common infection in those at risk for AIDS and that “vaccination is not likely to benefit virus carriers, because nearly all have active antiviral immunity.”³² Another of his papers, titled *The chemical bases of the various AIDS epidemics: recreational drugs, anti-viral chemotherapy and malnutrition* published in 2003 in the *Journal of Biosciences* further claimed the cause of AIDS was a “collection of chemical epidemics, caused by recreational drugs, anti-HIV drugs and malnutrition.” It elaborates that “AIDS is not contagious, not immunogenic, not treatable by vaccines or antiviral drugs and HIV is just a passenger virus.”³³ His last published paper titled, “AIDS since 1984: No evidence for a new, viral epidemic – not even in Africa”, in the 2011 *Italian Journal of Anatomy and Embryology* erroneously spoke against the application of ARV drugs to all HIV-infected patients, especially for “pregnant women, newborn babies.”³⁴

In South Africa, fake expertise in formulating “AIDS science” once came from the Presidential AIDS Advisory Panel consisted of leading AIDS denialists who were invited by President Mbeki and a German vitamin supplier, Matthias Rath, who was later invited by the Minister of Health Tshabalala-Msimang.³⁷ Interestingly, the initial opposition against ARVs from Dr. Duesberg appeared again in South African Minister of Health Tshabalala-Msimang’s claim that malnutrition is the primary cause of HIV and application of traditional medicine of garlic, beetroot and African potato is the most effective treatment and cure.³⁵

Indeed, it is important to note that degree-holding scientists can be non-experts with views entirely inconsistent with established knowledge.³⁵ As a result, to the general public, AIDS denialism seems to retain scientific credibility notwithstanding scientific affirmations to the contrary. One such affirmation rejected by the AIDS denialists was the Durban Declaration, signed by 5,000 physicians and scientists from over 50 countries attesting that HIV causes AIDS.³⁶ Despite the voluminous literature proving the importance of safe sex practices and ART in HIV treatment and prevention, denialist belief – substantiated by fake expertise – has been shown to result in negative attitudes about condom use and ART adherence.^{29,37} Moreover, through the media, President Mbeki’s assertion at the 2000 International AIDS Conference, arguing irresponsibly that HIV does not cause AIDS, has generated much momentum in the AIDS debate in the general public.¹⁴ Therefore, denialism may exist not because of a deficit in knowledge or ability to comprehend scientific evidence, but rather the facilitated manifestation and presentation of error-laden knowledge in the media.¹⁵ Furthermore, the rejection that HIV causes AIDS in AIDS denialist literature boils down to four principles that are aggravated by the mass media: (1) confusion in the general public, (2) interruption in implementation and education of essential intervention programs and information, (3) decreased public trust and (4) polarized public attitudes toward scientific research.¹⁵

CONFIRMATION BIAS

Confirmation bias in denialism is a strategy employed by denialists to attack the weakest published papers in a given literature.³ Denialists, through the help of the Internet, successfully amplify their support by targeting flaws in studies and even sometimes broadcasting the inherent limitations of especially poorly designed studies to the general public in order to discredit the entire field. Although most research scientists would be able to recognize these false claims, many people, including highly educated professionals, may be tricked into believing in the denialist propaganda. The target population of such propaganda may also include the frustrated population of people who distrust the established authority of politicians, scientists and medical professionals.¹⁴ In addition, individuals who have recently tested HIV-positive and are in denial of their infection statuses could also easily fall victim to this tactic of AIDS denialism.¹⁴

Interestingly, evidence of this selectivity may be similar to that in climate-change denialism. The followers of this movement, as described in the U.S. Congress of the Waxman-Markey climate-change bill, thought often do not think “hard about a crucial issue, are trying to do the right thing,” and as they often “don’t like the political and policy implications of climate change, ... they’ve decided not to believe in it – they’ll grab any argument, no matter how disreputable [the argument would] feed their denial.”⁴ Even though highly subjective, the opinions raised in this bill present an important point that is common in science denialism; that is, when one constructs and processes his or her internal discussion by

excluding all but easy-to-obtain arguments, such as those provided by the media, he or she may fall into the trap of the denialists. Furthermore, this population of individuals who distrust science and the government, is also often emotionally distraught and thus is more likely to become vulnerable to denialists’ attack.¹⁴ Hence, the American public is susceptible to denialist’s confirmation bias approach in which the enhanced availability of denialist-generated and population-specific arguments facilitates the confirmation bias tendency within the general public in workforce mobilization and sustainability.

STRATEGIC RESOLUTIONS OF AIDS DENIALISM

Many studies have suggested a variety of ways to address HIV/AIDS, especially in reducing the HIV-related stigma, preventing new infections, fundraising and advocating for the rights of those infected by this virus. These solutions include using music, sports and storytelling to increase public discussion and dissemination of accurate HIV/AIDS-related information.³⁸ However, the potential consequences of sustained AIDS denialism warrant more direct solutions.³⁹ Although diverting attention of the general public towards legitimate resources in hope of overwhelming the denialist literature may be effective, such effort will not be complete until the denialist movement is targeted consistently, elaborately and systematically, starting from the most current sustaining force, the Internet. Here, the issue is revisited with some practical suggestions based on the analysis of the underlying mechanism on which the Internet operates to sustain AIDS denialism.

Although it may be hard to change individual beliefs, it is possible to stop the growth of denialism’s growth in the general public. One potential approach is thus to not only increase the volume of legitimate information specifically in response to denialist’s arguments, but also to incorporate these materials in a broader educational initiatives among youth. These materials could be collectively synthesized and distributed frequently and periodically. Perhaps a single document of all reported AIDS denialist arguments contrasted by scientific evidence could be considered. This inter-organizational and national document could serve as one-stop resource for everyone in multiple languages. In fact, smaller efforts along these lines have already begun to emerge to refute denialism. Examples include the immediate comprehensive responses by Seth Kalichman (2015) and Alexey Karetnikov (2015) to denialist Patricia Goodson’s article published (and later moved to the Opinions section by the publishers) in *Frontiers in Public Health* journal in February of 2014 claiming that in which HIV does is once again challenged to not cause AIDS.^{5,28,40}

Moreover, papers responding to biased denialist literature face the difficulty that they must be comprehensive yet accessible to the population that is most likely to fall for denialist literature. Thus, the materials to tackle AIDS denialism must not be oversimplified or incomplete, in case they miss out on central arguments that in turn may discredit the original central thesis. One solution could be to present information in concise bullet-point format accompanied by links to foundational studies. For example, the fact that HIV causes AIDS is well established; however, the studies that support this connection may not be cited by the original study but instead through a reference mentioned in secondary resources, such as review articles. In other words, if we desire to educate the public about scientific knowledge, we must not consider the general public as incapable of understanding legitimate scientific materials. Furthermore, small-scale social media surveys, utilizing the vast variety of contemporary apps, including Grindr, Tinder, Jacked, okCupid, Facebook, Yik Yak, or Craigslist could be conducted informally, as part of user registration, to gather public attitude and apprehension about HIV/AIDS to further focus on the populations that may be falling under the AIDS denialist attack.

In addition, engaging a public celebrity as a role model has also worked well in the fight against HIV-related stigma and it could be well adapted to fight against AIDS denialism once denialism receives adequate attention especially among youth populations. Additionally, addressing AIDS and science denialism must also happen in the education system, both private and public institutions, starting from as early as middle school. Indeed, this implementation may face opposition from the governments in developing countries and even certain state officials on the basis of the federal-state sovereignty in the U.S. This bureaucratic conundrum in addressing AIDS denialism, however, may be addressed by focusing on young scientists and pre-doctoral candidates in all fields and

areas including psychology, biological sciences, biomedical sciences, social sciences, marketing and even economics and business. Specifically, guidelines should be developed to help these developing scientists to not only become aware of but also respond to the denialist movement, including in the clinical and research laboratory settings.⁴¹

The previously discussed excessive accessibility of falsified information about HIV/AIDS is magnified by the availability of the Internet. However, this problem may be different in certain countries, such as the case in southern African countries where many people still do not have Internet access.¹⁴ Yet, one would quickly recognize the potential tension created if “the West” compensates for this inadequacy either through importation of medical books or Internet infrastructure. Therefore, although changing one’s fundamental ideology and/or behavior that is rooted in one’s tradition is not the focus of this paper, it is important to acknowledge the social and historical implication of outside interventions within a given country in examining AIDS and science denialism.¹⁵

For this reason, it seems necessary to enhance people’s knowledge about HIV/AIDS and AIDS denialism, especially in developing countries where Western interventions have not been well accepted. One strong tactic would be a community participation approach, perhaps in other non-Internet avenues, such as music composition. Lastly, it may also be beneficial to address such issues by collaboration with the community of traditional healers and other focus groups to ensure complete dissemination of accurate and quality HIV/AIDS education.

CONCLUSION

It is a fact that HIV infection, without ART, will lead to AIDS; Since the Nobel Prize in Physiology was awarded to Luc Montagnier and Françoise Barré-Sinoussi were awarded the Nobel Prize in 2008 for this discovery their discovery that HIV is the cause of AIDS in 2008, it has become a fact that HIV infection, without proper ART, will lead to AIDS.^{5,42,43} Yet, AIDS denialism, despite being discredited beyond a reasonable doubt by the many authoritative national and international scientific communities, still persists. Its persistence has great potential to cause damage to current and future public health programs against HIV/AIDS, especially in South Africa where there still exists a large number of new-infection HIV-infected cases.^{9,44} Mass media, especially the Internet, serves as a platform for conspiracist ideation. Blogs and other online outlets do not only facilitate the existence of pseudoscience in informational campaign, but they also foster a damaging worldview through which AIDS and science denialism are sustained.

Science denialism is a motivated reasoning; by examining the ways in which denialists are using media to sustain their influence, potential strategies may be developed to address the issue more effectively. Furthermore, since most science denialists manifest similarly, the strategies developed for AIDS denialism remain applicable to address other science denialist movements.¹⁴ Lastly, science denialism prevents the smooth translation of scientific research into

practical health-related policies while compromising/disintegrating the public trust and attitude towards sound science. Hence, it is our one’s moral and scientific obligation to not only provide accurate health-related information, but also to fully rectify public health education about HIV/AIDS by stopping the spread of denialism.

References

- Diethelm P, McKee M. Denialism: What is it and how should scientists respond? *Eur J Public Health*. 2009 Jan; 19(1):2-4.
- Fumento M. 'Denialism' has no place in scientific debate. *Nat Med* [Internet]. 2010 May [cited 2015 Nov 24]; 16(5): 515-516. Available from: <http://dx.doi.org/10.1038/nm0510-515>
- Smith TC, Novella SP. HIV denial in the internet era. *PLoS Med* [Internet]. 2007 Aug [cited 2015 Nov 25]; 4(8):e256. Available from: <http://dx.doi.org/10.1371/journal.pmed.0040256>
- Schwartz SA. Trends that will affect your future... the denier movements critique evolution, climate change, and nonlocal consciousness. *Explore (NY)*. 2010 May; 6(3):135-142.
- Kalichman SC. Commentary on “Questioning the HIV-AIDS Hypothesis: 30 Years of Dissent.” *Front Public Health* [Internet]. 2015 Feb [cited 2015 Nov 25]; 3(30). Available from: <http://doi.org/10.3389/fpubh.2015.00030>.
- Help for HIV. FACT #1: There is strong evidence that the HIV test you took is very often wrong. So you might not be HIV-positive at all [Internet]. [Place unknown]: [publisher unknown]; [date unknown] [cited 2015 Nov 25]. Available from: <http://helpforhiv.com/>.
- Pienaar K. (Re)reading the political conflict over HIV in South Africa (1999-2008): A new materialist analysis. *Soc Theory Health*. 2014 Mar [cited 2015 Nov 25]; 12(2):179-196. Available from: <http://dx.doi.org/10.1057/sth.2014.1>.
- Denying science. *Nat Med*; 2006 April [cited 2015 Nov 25]; 12(4): 369-369. Available from: <http://dx.doi.org/10.1038/nm0406-369>.
- Simelela N, Venter WDF, Pillay Y, Barron P. A political and social history of HIV in South Africa. *Curr HIV/AIDS Reports*. 2015 Jun [cited 2015 Nov 25]; 12(2):256-261.
- Government of South Africa. Presidential AIDS Panel Advisory Report. A synthesis report of the deliberations by the panel of experts invited by the President of the Republic of South Africa, the Honourable Mr Thabo Mbeki. 2009 Mar [cited 2015 Nov 25]. Available from: <http://www.virusmyth.com/aids/hiv/panel/aids-report.pdf>.
- Bateman C. Paying the price for AIDS denialism. *S Afr Med J*. 2007 Oct; 97(10):912-4.
- McKee M, Diethelm P. How the growth of denialism undermines public health. *BMJ*. 2010 Dec [cited 2015 Nov 25]; 341. Available from <http://www.bmj.com/content/341/bmj.c6950.abstract>
- Minol K, Spelsberg G, Schulte E, Morris N. Portals, blogs and co: the role of the internet as a medium of science communication. *Biotech J*. 2007 Sep; 29(9):1129-1140.
- Kalichman SC. Denying AIDS : Conspiracy theories, pseudoscience, and human tragedy. New York: Copernicus/Springer; 2009.
- Lewandowsky S, Gignac GE, Oberauer K. The role of conspiracist ideation and worldviews in predicting rejection of science. *Plos One*. 2013 Oct [cited 2015 Nov 25]; 8(10):e75637. Available from <http://dx.doi.org/10.1371/journal.pone.0075637>
- Dunlap RE, Jacques PJ. Climate Change Denial Books and Conservative Think Tanks: Exploring the Connection. *Am Behav Sci*. 2013 Jun; 57(6):699-731.
- Monto AS. The river: A journey to the source of HIV and AIDS. *Am J Epidemiol*. 2001 Sept; 154(5):484-485.
- Farber C. Out of control: AIDS and the corruption of medical science [Internet]. *Harper's Magazine*; 2006 May [cited 2015 Nov 25]. Available from <http://harpers.org/archive/2006/03/out-of-control/>.
- Al-Bayati M. The real cause of AIDS? [Internet]. Chicago: Mercola.com; 2001 Jul 11 [cited 2015 Nov 25]. Retrieved from: <http://articles.mercola.com/sites/articles/archive/2001/07/11/aids-part-one.aspx>.
- Flanagan B. Texas: 14-year old virgin falls pregnant after flu shot [Internet]. San Antonio: World New Daily Report; 2015 Sep 23 [cited 2015 Nov 25]. Available from: <http://worldnewsdailyreport.com/texas-14-year-old-virgin-falls-pregnant-after-flu-shot/>.
- Broxmeyer L, Cantwell A. AIDS: "It's the bacteria, stupid!" [Internet]. [Place unknown]: Rense.com; 2008 [cited 2015 Nov 25]. Available from: <http://rense.com/general83/aids.htm>
- Bauer HH. Truth stranger than fiction: HIV is not the cause of AIDS [Internet]. Blacksburg: Edward Via College of Osteopathic Medicine; 2007 Sep 12 [cited 2015 Nov 25]. Available from: <http://failingsofhaivaidstheory.homestead.com/medseminar.pdf>.
- HIV does not cause AIDS [Internet]. [Place unknown]: [publisher unknown]; [date unknown]. Available from: <https://sites.google.com/site/loveevolvetranscend/hiv-does-not-cause-aids>
- Taylor PR, Brannon K. Wrongful death. The AIDS trial [Internet]. [Place unknown]: L&G Productions LLC; 2010 [cited 2015 Nov 25]. Available from: www.theAIDStrial.com
- Living with HIV drugs [Internet]. [Place unknown]: [publisher unknown]; [date unknown]. Available from: www.LivingWithoutHIVDrugs.com
- Hausman BL. Viral mothers: Breastfeeding in the age of HIV/AIDS. Ann Arbor: University of Michigan Press; 2011.
- Holtzhausen D, Zerfass A, editors. The Routledge handbook of strategic communication. New York: Taylor & Francis Group; 2014.
- Goodson P. Questioning the HIV-AIDS Hypothesis: 30 Years of Dissent. *Front Public Health*. 2014 Sep; 2:154.
- Bogart LM, Thorburn S. Are HIV/AIDS conspiracy beliefs a barrier to HIV prevention among African Americans? *J Acquir Immune Defic Syndr*. 2005 Feb; 38:213-218.
- Westergaard R, Beach M, Saha S, Jacobs E. Racial/Ethnic differences in trust in health care: HIV conspiracy beliefs and vaccine research participation. *J Gen Intern Med*. 2014 Jan; 29(1):140-146.
- Kalichman SC, Eaton L, Cherry C. "There is no Proof that HIV Causes AIDS": AIDS Denialism Beliefs among People Living with HIV/AIDS. *J Behav Med*. 2010 Dec; 33(6):432-440.
- Duesberg PH. Retroviruses as carcinogens and pathogens: Expectations and reality. *Cancer Res*. 1987 Mar; 47(5):1199-1220.
- Duesberg P, Koehnlein C, Rasnick D. The chemical bases of the various AIDS epidemics: Recreational drugs, anti-viral chemotherapy and malnutrition. *J Biosci*. 2003 Jun; 28(4):383-412.
- Duesberg PH, Mandrioli D, McCormack A, Nicholson JM, Rasnick D, Fiala C, et al. AIDS since 1984: No evidence for a new, viral epidemic not even in africa. *Ital J Anat Embryol* [Internet]. 2011 [cited 2015 Nov 25]; 116(2):73-92. Available from ProQuest: <http://search.proquest.com/docview/910514999?accountid=10598>.
- French CC, Haque U, Bunton-Stasyshyn R, Davis R. The "Haunt" project: An attempt to build a "haunted" room by manipulating complex electromagnetic fields and infrasound. *Cortex* [Internet]. 2009 May [cited 2015 Nov 25]; 45(5):619-629. Available from ScienceDirect: <http://dx.doi.org/10.1016/j.cortex.2007.10.011>.
- The Ddurban Ddeclaration. *Nature*. 2000 Jul; 406(6791):15-16. Available from: <http://dx.doi.org/10.1038/35017662>.
- Bogart LM, Wagner G, Galvan FH, Banks D. Conspiracy beliefs about HIV are related to antiretroviral treatment nonadherence among african american men with HIV. *J Acquir Immune Defic Syndr*. 2010 Apr; 53:648-655.
- UNODC. Tackling AIDS with the power of football [Image on the Internet]. [Place unknown]: Bureau Report; [date unknown] [cited 2015 Nov 25]. Available from: http://www.unodc.org/images/southasia//Events/Media%20Gallery/Football/football_news_clippings.JPG.
- Burley J, Colman A. Science and philosophy: Bridging the two cultures divide. *J Mol Bio* [Internet]. 2002 Jun [cited 2015 Nov 5]; 319(4):907-915. Available from ScienceDirect: [http://dx.doi.org/10.1016/S0022-2836\(02\)00340-6](http://dx.doi.org/10.1016/S0022-2836(02)00340-6)
- Karetnikov A. Commentary: Questioning the HIV-AIDS Hypothesis: 30 Years of Dissent. *Front Public Health* [Internet]. 2015 Aug [cited 2015 Nov 25]; 3:193. Available from: <http://doi.org/10.3389/fpubh.2015.00193>.
- Rosenau J. Science denial: A guide for scientists. *Trends Microbiol* [Internet]. 2012 Dec; 20(12):567-569. Available from: <http://dx.doi.org/10.1016/j.tim.2012.10.002>.
- National Institute of Allergy and Infectious Diseases. The evidence that HIV causes AIDS [Internet]. Washington, D.C.: NIH; 2010 Jan 14 [cited 2015 Nov 25]. Available from: <http://www.niaid.nih.gov/topics/hiv/aids/understanding/howhivcausesaids/pages/hiv-causesaids.aspx>.
- What is AIDS? [Internet] Arroyo Seco: AidsInfoNet.org; 2014 [cited 2015 Nov 25]. Available from http://www.aidsinfonet.org/fact_sheets/view/101
- UNAIDS. Fact sheet: 2014 statistics [Internet]. Geneva: UNAIDS; 2014 [updated 2015 Nov 24; cited 2015 Nov 25]. Available from: http://www.unaids.org/en/resources/documents/2015/20150714_factsheet