

COMMENTARY



## The overlooked dangers of anti-vaccination groups' social media presence

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In 2014, a large measles outbreak swept through the Disneyland theme park in California, infecting over 50 people.<sup>1</sup> Several of the children who initially spread the disease were intentionally left unvaccinated by their parents.<sup>1</sup>

Outbreaks such as the one in the Disneyland theme park are becoming increasingly common due to falling vaccination rates. Undoubtedly, organized anti-vaccination groups have contributed to the drop in vaccination compliance and anxieties concerning vaccination. These groups often have a strong presence on social media and well-developed websites that attract people to their cause. But these sites have drawn very little critical attention. In order to combat falling vaccination rates, it is important for those supporting vaccination to be aware of, examine, and counter the claims of these groups.

One representative example of a group with a highly visible website is “A Voice for Choice.”<sup>2</sup> The stated mission of this California-based non-profit organization is to “promote people’s rights to be fully informed about the composition, quality, and short- and long-term health effects of food and pharmaceutical products.” The group also aims to educate parents regarding the supposed dangers of vaccination and, based on these “risks,” to lobby for increased vaccine exemptions. As of January 2017, 3,809 people have “liked” the group’s Facebook page.<sup>3</sup>

Far from being fully informative, A Voice for Choice promotes long debunked theories regarding vaccination that are unsupported in the peer-reviewed, scientific literature. For example, A Voice For Choice posits on its website that it is “rare that any kid completely escapes from some effect caused by the toxic materials in vaccines.” It links vaccinations to cancer, autoimmune disease, seizures and even peanut allergies.

A Voice for Choice also purports to offer parents comprehensive information about vaccine ingredients. However, in reality it is a platform that promotes misleading information. For example, A Voice for Choice’s website states that vaccines contain aluminum, a “neurotoxin,” in an amount that exceeds levels deemed safe by the EPA. Aluminum is incorporated into some vaccinations as an ‘adjuvant’ to increase the immune response.<sup>4</sup> An infant may receive about four milligrams of aluminum from vaccinations during the first year of his or her life.<sup>5</sup>

However, the website omits the fact that infants may also receive about 7 milligrams of aluminum from nursing, as it is found naturally in breast milk.<sup>6</sup> It also fails to mention that adults ingest 7 to 9 mg of aluminum per day.<sup>7</sup>

Even more troubling is the group’s disregard for the concept of herd immunity. In one part of the website, the group concludes that all California schools “as a whole” have a vaccination rate that far exceeds the levels needed to maintain herd immunity. The group does not substantiate how it reaches the conclusion that every school in California has a vaccination rate sufficient to achieve herd immunity. In fact, in 2015, the California Department of Public Health reported that in Marin County, only 87.8% of children in childcare were fully vaccinated.<sup>8</sup> In 2016, a charter school in California shut down temporarily after one student contracted measles.<sup>9</sup> The California Department of Public Health reported that the vaccination rate for kindergarteners in that school was 43%.<sup>10</sup> Contrary to the evidence, the website conveys that the vaccination rate is so high that parents can easily opt out and still benefit from herd immunity. In the name of “choice” the website actually promotes free riding—the act of getting a benefit without being a participant in a beneficial group activity.

Another example of the of the website’s failure to provide scientific rigor to its claims is the ease in which individuals can freely post their “vaccine injury stories.” On one part of A Voice for Choice’s website, parents can post how their children were medically affected by vaccinations. The website encourages parents to post pictures of their children before and after vaccinations and to describe how their physical abilities were altered. It is unclear if any of the stories posted are verified by the website. There is no indication that parents are required to show any medical proof that a vaccine in fact affected their child.

The website also purports to offer scientific information on both sides of the debate regarding vaccination. Nonetheless, there is no mention of the grave dangers that parents expose their children to by failing to vaccinate them. One study has shown that children who obtain vaccine exemptions may be as much as 35 times more likely to contract measles than those who are fully vaccinated.<sup>11</sup> A child infected with measles may develop a high fever and without medical attention, encephalitis and even death. Similarly, a child infected with mumps can develop complications such as meningitis and in some rare cases deafness.

The website not only fails to cite the harms caused by not vaccinating, but also omits any evidence to support its claims regarding the dangers of vaccination. The website states that it is rare for any child to escape the toxic effects of vaccination without citing

any supporting scientific evidence for its assertion. Rather, it scares readers into believing that vaccinations will inevitably harm the health of their children. The website also omits the tremendous number of scientific studies that discount any connection between vaccination and the risk of developing autism or other diseases. While the website ostensibly aims to give parents “informed choice” and “transparency,” in reality it merely provides unsubstantiated information which cannot lead as the group claims to informed choices.

Another prime example of the distorted reporting of the website is its coverage of controversial remarks that Dr. William Thompson, a former senior scientist at the Centers for Disease Control (CDC), made regarding vaccination. Dr. Thompson, referred to by the website as a whistle-blower, initially claimed that he omitted statistically significant data in a scientific study which showed that African American males were at a greater risk of developing autism as a result of the MMR vaccine. He relayed this data to another scientist, who subsequently published a paper claiming that the data showed a clear link between vaccinations and autism in African-Americans. However, the website omits the full story. The study was retracted one month later due to “concerns about the validity of the methods and statistical analysis” leading the journal to lose “confidence in the soundness of the findings.”<sup>12</sup>

Also missing from the website is any mention of how falling vaccination rates can directly harm children and adults who are physically unable to get vaccinated, including infants, transplant patients, the immunosuppressed, the elderly and those with cancer. Since their immune systems are compromised, even minor infections may be life threatening for them. These individuals depend on herd immunity of the community to ensure that they remain uninfected. When parents choose not to vaccinate their children, they directly expose their children as well as other especially vulnerable members of the community to significant risk.

There is growing concern about anti-vaccine sentiment in the United States and other countries. There is also growing concern that false and misleading claims about science and public health are having significant impact on politics and policy in the U.S. A Voice for Choice is an example of how an anti-vaccination group can harness the power of social media to promote uncorroborated claims that engender fear. The effect that these websites have demands more serious, critical attention from public health officials, academics, the medical community and the media. Disagreement with proven facts is a choice that anyone can choose to make. Disseminating

falsehoods, misinformation and distortions of the facts about vaccines is not a choice that ought to go unremarked and unchallenged.

## Disclosure of potential conflicts of interest

Dr. Caplan is on the board of The Center for Vaccine Ethics & Policy. This is an unpaid position.

## References

- [1] CDC. U.S. multi-state measles outbreak, December 2014–January 2015. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. [accessed 2016 Dec 12]. Available at: <http://emergency.cdc.gov/han/han00376.asp>
- [2] A voice for choice. 2016. [accessed 2016 Dec 12]. Available at: <http://avoiceforchoice.org>
- [3] A voice for choice Facebook page. n.d. [accessed 2016 Dec 5]. Available at: <https://www.facebook.com/avoiceforchoice/?fref=ts>
- [4] Leroux-Roels G. Unmet needs in modern vaccinology: Adjuvants to improve the immune response. *Vaccine* 2010; 28(3): C25–C36; <https://doi.org/10.1016/j.vaccine.2010.07.021>
- [5] Mitkus RJ, King DB, Hess MA, Forshee RA, Walderhaug MO. Updated aluminum pharmacokinetics following infant exposures through diet and vaccination. *Vaccine* 2011; 29(51): 9538–43; <https://doi.org/10.1016/j.vaccine.2011.09.124>
- [6] The Children’s Hospital of Philadelphia, Vaccine Ingredients - Aluminum. 2016 [accessed 2016 Nov 6]. Available at: <http://www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients/aluminum>
- [7] Pennington JA, Schoen SA. Estimates of dietary exposure to aluminium. *Food Addit Contam* 1995; 12(1):119–28; <https://doi.org/10.1080/02652039509374286>
- [8] California Department Of Public Health, Immunization Branch. 2015–2016 CHILD CARE IMMUNIZATION ASSESSMENT. [accessed 2016 Nov 12]. Available at: [https://www.cdph.ca.gov/programs/immunize/Documents/2015-16\\_CA\\_ChildcareSummaryReport.pdf](https://www.cdph.ca.gov/programs/immunize/Documents/2015-16_CA_ChildcareSummaryReport.pdf)
- [9] CBS News. Measles case shuts down California elementary school. 2016 Mar 30 [accessed 2016 Nov 12]. Available at: <http://www.cbsnews.com/news/measles-case-shuts-down-california-school-in-area-with-low-vaccination-rate/>
- [10] California Department Of Public Health. 2015–16 immunization status of kindergarten students, California [accessed 2016 Nov 12]. Available at: [https://www.cdph.ca.gov/programs/immunize/Documents/2015-16\\_CA\\_Kindergarten\\_Data.pdf](https://www.cdph.ca.gov/programs/immunize/Documents/2015-16_CA_Kindergarten_Data.pdf)
- [11] Salmon DA, Haber M, Gangarosa EJ, Phillips L, Smith NJ, Chen RT. Health consequences of religious and philosophical exemptions from immunization laws individual and societal risk of measles. *JAMA* 1999; 282(1):47–53; <https://doi.org/10.1001/jama.282.1.47>
- [12] Hooker BS. Retraction: Measles-mumps-rubella vaccination timing and autism among young African American boys: a reanalysis of CDC data. *Transl Neurodegener* 2014; 3:22; <https://doi.org/10.1186/2047-9158-3-22>