

Here we go again: the reemergence of anti-vaccine activism on the Internet

Lá vamos nós outra vez: a reemergência do ativismo antivacina na Internet

Aquí vamos de nuevo: el resurgimiento del activismo antivacunas en Internet

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Abstract

This essay discusses the resurgence of anti-vaccine activism in recent years, based on relevant literature and the author's own experiences. After presenting possible reasons for the reemergence of such movements and their consequences, the author analyses the role of Internet-mediated communication in amplifying this discourse and making it less amenable to criticism, presenting some of the main arguments deployed by the anti-vaccine agents in their discussions. The text concludes with a draft of possible responses to this increasingly worrying phenomenon.

Vaccination Refusal; Anti-Vaccination Movement; Internet; Social Media

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The return of the undead

The World Health Organization (WHO) has recently declared the reluctance or refusal to vaccinate despite its availability as one of the ten greatest threats to global health ¹. Indeed, there is evidence linking the growth of such movements with outbreaks of immunopreventable diseases in areas where they had previously been eradicated ^{2,3}.

Anti-vaccine movements are as old as vaccines themselves, as witnessed, for instance, by the famous British cartoon criticizing Jenner's anti-smallpox vaccine, which displayed people sprouting cow parts from their bodies after being vaccinated. But in previous historical circumstances much of this resistance could be attributed to ignorance about vaccines or their efficacy. The existence of such movements in countries with highly educated populations on the eve of the third decade of the 21st century is more difficult to understand. This essay presents some tentative answers that may help decipher such a puzzle, based on relevant literature and the author's own experience observing, and some times participating in, arguments around vaccines on major Internet-mediated social networks.

First, vaccines are victims of their own success, with smallpox eradication as a major example. When diseases with serious sequelae such as polio left very visible marks in the population, especially in children, popular pressure was put on the authorities to demand vaccination. With the virtual disappearance of several infectious diseases due to vaccination, its benefit becomes increasingly intangible to the general population, removing a powerful motivation for people in general to vaccinate themselves, and in particular for parents to vaccinate their children. While the anti-vaccine movement is still in the minority (fortunately), the drop in vaccination coverage it produces may reduce immunization to levels in which the phenomenon of herd immunity no longer exists, with clear repercussions on public health – this is the case with measles, for example, which is highly contagious and requires high population coverage to interrupt the chain of transmission. Its resurgence in the United States, for instance, is attributable to the action of anti-vaccine movements in that country ^{2,3}.

Second, there are misapprehensions of the risks of both vaccinating, which are overestimated, and not vaccinating, which are underestimated ^{4,5}. The risks of adverse effects of vaccines in general are extremely low ⁶, and the risks of various immunopreventable diseases, while not so high when compared to certain known risk factors, are certainly much higher than those of vaccination. The term “common childhood diseases” leads to a false sense of security, assuming that they are always benign, which would justify not vaccinating. Take measles as an example: measles virus infection not only compromises immunity for some years, increasing the risk of secondary infections and mortality, especially in children ⁷, but can lead, even more rarely, to subacute sclerosing panencephalitis (SSPE) which entails a high mortality rate ⁸. In both situations, the risk is much higher than any complication of the vaccine ⁹: for one million non vaccinated children infected with the measles virus, we would have 300,000 occurrences of complications, including 2,000 deaths, while for one million vaccinated children, 34 cases of major adverse effects would be expected, most of which would be the occurrence of transient thrombocytopenia, with only one case of significant allergic reaction and less than one case of encephalitis. The sad consequences of a measles outbreak was recently illustrated by the resurgence of the disease in the Pacific, particularly in the American Samoa, following a misguided suspension of the MMR routine vaccination after an egregious iatrogenic error ¹⁰. By December 29th, 2019, in that area alone 5,675 cases were reported, with 81 reported deaths ¹¹. Children coffins had to be sent from New Zealand, since Samoa ran out of them ¹⁰.

Third, vaccine resistance has an antiestablishmentarian component. The skepticism and even distrust of traditional sources of information such as science or medicine leads to the systematic refusal of any statement from such sources ¹². Distrust of everything that concerns medicine is often associated with the idea that only economic interests, often undisclosed, are the sole determinants of the decisions of health specialists. Bricker & Justice ¹³ summarize in three propositions what Gray ¹⁴ called, somewhat inadequately, “postmodern medicine”: hostility towards singular truths; aversion to scientific objectivity; and decreased trust in expertise.

There is indeed a reasonable core in this perspective, since economic interests effectively play a disproportionate role in health care, constituting an example of what Conrad ¹⁵ calls the engines of medicalization. But by transforming this factual core into a hyperbolic conspiracy theory ¹⁶, assertions about health issues from biomedical research are assumed as being “at the behest of the pharma-

ceutical industry” and dismissed a priori, blocking any possibility of argumentation to the contrary. It is true that part of the modern anti-vaccine movement gained unexpected reinforcement from an article published in 1998, which postulated a relationship between the MMR vaccine and autism. Appearing in one of the most prestigious medical journals in the world, *The Lancet*, it was authored by a group coordinated by Andrew Wakefield¹⁷. Although the article was later retracted and its main author lost his license to practice medicine in the United Kingdom due to numerous ethical violations linked to the underlying “research”, the damage was already done. Even with numerous epidemiological studies with populations of considerable size having not detected such association, the panic persists¹⁸. It should be noted in this case the considerable ableist component of this situation, fueled by anti-autist prejudice¹⁹.

This refusal of scientific knowledge is reinforced by complex socio-cognitive phenomena, such as the “backfire effect”, meaning that once a person has embraced a mistaken conception, the presentation of facts that contradict such ideas ends up reinforcing, rather than weakening them²⁰. Also relevant in this context is the phenomenon known as Dunning-Kruger effect, after the authors who first described it, which leads to erroneous evaluations of one’s own judgment capacity, making people with less knowledge think that they are better able to evaluate information than the experts in the field themselves²¹. This has been observed specifically with regard to anti-vaccine positions²².

“Well, I read it on the Internet”

Such phenomena have been present throughout human history, but with the emergence of new forms of communication, especially those mediated by the Internet, they gained a whole new relevance. Whereas in the past contrarian views would probably be confined to isolated, disperse pockets, Internet-mediated social networks allow such pockets to converge and coalesce, gaining the necessary critical mass to become vocal parties in the general discussion. Furthermore, algorithms created to enhance corporate gains from advertising create “bubbles” that prevent challenging views to effectively penetrate such groups, fostering an environment of positive reinforcement of all kinds of misconceptions^{23,24} – consider, for instance, the recent growth of the numbers of “flat earth” believers. Such beliefs easily morph into conspiracy theories^{25,26}, as a reaction to perceived existential threats and an attempt of making sense of complex, little-understood situations²⁷, a defense from an increasingly incomprehensible technology-intensive life, a “runaway world”, as expressed by Giddens²⁸. People ill-equipped to understand the intricacies of epidemiology, immunology, microbiology and so forth feel empowered and believe they “turned the tables”, being actually more knowledgeable than credentialed experts, privy to secret information that is hidden from the uncultivated masses. This can be seen, for instance, in recurring categories employed by anti-vaccine and other contrarian groups. “Governments” and “Big Pharma” are the enemies; health professionals, researchers and informed laypeople that present arguments in favour of vaccines are “shills” for the perceived enemy; those who are “in the know” about the “hidden truths” are “awoke”, those who are not are “sheeple”, a self-explaining portmanteau of “sheep” and “people”.

The resulting online communities present an echo chamber aspect, in which arguments become somewhat repetitive and stereotyped^{29,30}, made evident by the comedic visual commentary of the “anti-vaccine bingo cards” that have for long circulated on the Internet (e.g., https://www.reddit.com/r/vaxxhappened/comments/8non7i/get_your_antivax_bingo_card_here/; https://lizditz.typepad.com/i_speak_of_dreams/2014/05/point-refuted-a-thousand-times.html; https://www.reddit.com/r/vaxxhappened/comments/bzg5we/antivax_bingo_enjoy/; <https://imgur.com/gallery/QNvYusk/comment/1422656625>).

More seriously, the main argumentative strategies of anti-vaccine activists on the Internet have been the object of a number of studies^{13,31,32}. Without any pretension of an exhaustive review, the main kinds of arguments can be grouped into a few clusters:

(i) *Dangerous ingredients*: much heat was generated by the presence of ethylmercury as a preservative in vaccines, leading to its exclusion from most vaccines used in the United States³³. That substance, however, does not accumulate in the organism and poses no health risk. Similar arguments are made about adjuvants such as aluminium salts. In both cases the doses are minimal and with no unwar-

ranted consequences. Another common item cited in this category are fetal cells, based on a misunderstanding about the use of cultivated cells as a medium for growing viruses used in vaccines;

(ii) *Vaccine injury*: claims are made that harm from vaccines are much more prevalent than admitted by the biomedical establishment, usually stemming from ad hoc ergo propter hoc fallacies in personal anecdotes and fueled by misunderstandings about how possible adverse events are reported. Especially in the United States, the Vaccine Adverse Event Reporting System (VAERS), an unsupervised self-reporting database maintained by the Centers for Disease Control and Prevention (CDC), is incorrectly used as a basis for estimates of prevalence of such events. Another example of misinterpretation is taking reported incidents from vaccine trials, printed in the vaccine inserts, as demonstration of correlations, when they are basically, as the VAERS data, raw inventories of reported events after vaccination which may or may not be associated with the vaccine, which have to be informed for legal reasons even when there is no epidemiological evidence of a correlation. “Read the inserts” is a common “battle cry” for the anti-vaccine movement, both for injury and dangerous ingredients claims;

(iii) *Arguments of authority based on questionable material produced by questionable “experts”*: there is a handful of anti-vaccine activists with some degree or other that have been consistently produced low-quality research that fuels the distrust, most notably the previously mentioned Andrew Wakefield;

(iv) *Diseases declined for other reasons than vaccines and/or did not decline at all*: in the first case, misinterpretations of epidemiological data – for instance, looking just at mortality and not incidence data – are the basis for claims that “better hygiene” brought down diseases in the industrialized West. In the second case, elaborate conspiracies were created about how polio, for instance, has simply been renamed as other diseases over the years, denying its decline and eradication in most parts of the world;

(v) *There are too many vaccines, and given in a short period of time*: this is unfortunately supported by some pediatricians who propose “alternate schedules” with no study backing those, which only lead to a delay in achieving immunization and thus unnecessarily prolonging risks. The irony here is that although more vaccines are given today than in the past, due to refinements in the fabrication process the total number of antigens in the ensemble of new vaccines is smaller than what fewer vaccines contained ³⁴;

(vi) *“Natural” immunity is better*: underestimating the risks of exposure to immunopreventable diseases, with no real understanding of how immunity work and leaning heavily on naturalistic fallacies, people organize “disease parties” to expose healthy children to sick ones;

(vii) *Parents (especially mothers) know better*: appeals to “intuition” that should trump any evidence to the contrary.

These arguments are usually presented through personal narratives, laden with emotion, making it difficult to counterargument on a purely rational level.

Which way to the front?

Presented with a circulating discourse that is not only demonstrably wrong but clearly harmful to public health as well, how should people in general and health professionals in particular react? One possible approach is to resort to legal measures to coerce people to vaccinate. Despite the debate, legal and ethical experts agree that such measures are ethically and legally justified ^{35,36}. Individual rights are usually invoked as a counter-argument, but (a) the fact that vaccination, via herd immunity, is a public health intervention that protects communities, including those who cannot be vaccinated and (b) the rights in question are usually claimed by parents, implicitly disregarding children’s own rights. As Reiss, a legal expert with extensive contributions to this discussion, puts it, “*societies should improve public understanding of vaccinations but also not hesitate to use the law to prevent deadly diseases from spreading*” ³⁶ (p. 795), and “*in addition to the risk non-vaccinating poses to society generally, a parent’s decision not to vaccinate creates an immediate and personal risk to the child left unvaccinated. Indeed, unvaccinated children are among the more common victims of vaccine-preventable diseases*” ³⁷ (p. 73).

The real issue, though, is how to counteract the misinformation being disseminated, considered by Wu & McCormick ³⁸ a moral obligation of health professionals. Given all the barriers to actually changing people’s minds, as discussed before, this may sound like an impossible task. First of all, there

is an important group which is not necessarily anti-vaccine, but susceptible to be convinced by anti-vaccine activists, the so-called “on the fence” individuals. This is a priority audience for such efforts, since in the absence of a counter-argument the anti-vaccine activist will win them over by default. The American Academy of Pediatrics provided a valuable resource to help such task, a comprehensive set of guidelines to counter vaccine hesitancy ³⁹.

Additionally, there are some encouraging findings that point to possible inroads in this struggle. Vraga and Bode have shown that providing sources of correct information can correct misinformation on the Internet ^{40,41,42}. Providing information about herd immunity ⁴³ or preemptively debunking conspiracy theories for people who were not captured by them ²⁵ proved effective as well. Having community members and not just health professionals countering misinformation can help as well ⁴⁴, as it may counteract anti-expert bias.

A final reminder must be made about the nature of the issue: this is not a purely rational debate. Emotions and values play a fundamental role in forming opinions, as Lakoff reminds us ⁴⁵. Still according to this author, the language used in arguments frame the subject in ways that reinforce positions and can lead to defeat even before the debate begins. Robinett ⁴⁶ used Lakoff’s approach to discuss the impact of specific political views on women and children’s health, and although the research cited emphasizes the role of conservative worldviews, the issues pointed out seem to apply to the whole political spectrum: suspicion of government, distrust of science and reliance on social media for information.

This means that in order to develop effective pro-vaccine messaging, one must keep in mind some key issues: avoid repeating the language of key anti-vaccine tropes, so as not to reinforce them; consider the emotional resonance of the ideas being put forward, for instance the importance of protecting children, one’s own and in general or taking into account the needs of those who cannot be vaccinated, either because they are too young or too frail; above all avoid patronizing and antagonizing “on the fence” persons.

This also entails the need to provide a concerted effort to occupy space on social media with the counterarguments to anti-vaccine propaganda, counting on varied kinds of expertise, especially of media professionals, and the collaboration of “interactional experts”, as defined by Collins & Evans ⁴⁷, people who will be able to bridge the gap between the scientific community and society at large.

Whether such strategies will work or not remains to be seen; we know for sure, however, that if anti-vaccine activism goes uncontested in the public debate, it will win people over by default.

Additional information

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Resumo

Este ensaio discute o ressurgimento do ativismo antivacina nos últimos anos, com base na literatura e na experiência do próprio autor. Depois de abordar os possíveis motivos pelo ressurgimento desses movimentos e suas consequências, o autor analisa o papel da comunicação via Internet na amplificação desse discurso, tornando-o menos sensível a críticas, e apresenta alguns dos principais argumentos adotados pelos ativistas antivacina. O texto conclui com um esboço das possíveis respostas a esse fenômeno, cada vez mais preocupante.

Recusa de Vacinação; Movimento contra Vacinação; Internet; Mídias Sociais

Resumen

Este trabajo discute el resurgimiento del movimiento antivacunas durante estos recientes años, basado en literatura relevante y en las propias experiencias del autor. Tras presentar las posibles razones del resurgimiento de tales movimientos y sus consecuencias, el autor analiza el rol de la comunicación a través de Internet, amplificando este discurso y haciéndolo menos susceptible a la crítica, presentando algunos de sus principales argumentos difundidos por agentes antivacunas en sus discusiones. El trabajo concluye con un texto preliminar sobre las posibles respuestas para este fenómeno cada vez más preocupante.

Negativa a la Vacunación; Movimiento Anti-Vacunación; Internet; Medios de Comunicación Sociales

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