

Cancer misinformation puts patients in harm's way

On Jan 3, 2024, Florida surgeon general Joseph Ladapo discouraged immunisation with mRNA COVID vaccines, suggesting they cause cancer. Experts immediately condemned the comments. "The claim made by Dr Ladapo is biologically implausible and there is no preclinical, nor clinical, evidence to support it", said Skyler Johnson (Huntsman Cancer Institute and University of Utah, Salt Lake City, UT, USA).

Ladapo's claim was just the latest example of cancer-related misinformation patients and their loved ones face in public and political discourse and online. Increasingly, misinformation is rooted in political polarisation and the so-called culture wars, such as claims that medical abortions or face masks cause cancer. Former President Donald Trump has infamously claimed, without evidence, that windmills are carcinogenic.

Cancer misinformation can be dangerous when it delays patients' pursuit of proven life-prolonging treatments, said Christina M Annunziata (American Cancer Society, Atlanta, GA, USA). "Misinformation can lead patients to replace the known treatments with alternative approaches, or attempting to augment their treatment with alternative medications that lower the effectiveness of the standard medications", Annunziata told *The Lancet Oncology*. "Both of these actions can increase the risk of death for a cancer patient." David Gorski (Wayne State University School of Medicine, Detroit, MI, USA) has seen patients delay treatment because of misinformation. He said, "A cancer that was operable and treatable is allowed to progress until it is harder to treat or even untreatable."

The number of websites and social media influencers peddling cancer quackery has grown rapidly over recent years. "The number of dodgy sites is too numerous to list", Gorski said. "A

good rule of thumb is that any anti-vax site will also be bad about cancer, and I have noticed a lot of COVID-19 anti-vaxxers are moving into cancer quackery, in particular claiming that ivermectin can cure cancer."

"The accessibility of online health information and the rapid growth of social media has contributed to the rise of cancer misinformation", said Eleonora Teplinsky (Valley Health System, Ridgewood, NJ, USA and Icahn School of Medicine at Mount Sinai, New York, NY, USA). "As people increasingly turn to the internet to search for health information, they often encounter misleading claims and contradictory data. The spread of misinformation is compounded by low digital health literacy and social media algorithms that prioritise popular posts, often regardless of their content."

By some estimates, more than half of cancer information on social media platforms is misleading, Annunziata said. It is not entirely clear why people so frequently share misinformation, she said. "[It] may be rooted in mistrust of science and medicine, as well as a need to regain control of the frightening consequences of a cancer diagnosis", she surmised.

Misinformation can disrupt effective cancer prevention, diagnosis, and care. But its potential to do harm does not stop there. The constant barrage of inaccurate claims and inconsistent information from different sources can be a source of anxiety and distress for individuals trying to understand a cancer diagnosis and can harm patients' trust for and relationships with clinicians and caregivers, said Echo L Warner (Huntsman Cancer Institute, Salt Lake City, UT, USA). It can also strain patients' and their families' finances when patients pursue unproven treatments that are not covered by health insurance, Warner added. Americans with cancer spend tens—and even hundreds—of

thousands of dollars out-of-pocket for unproven treatments.

"Importantly, exposure to misinformation can undermine trust in health-care providers and the medical system, which could lead to lower adherence to recommendations and guidelines and worse health outcomes", said Wen-Ying Sylvia Chou (Health Communication and Informatics Research Branch, US National Cancer Institute [NCI], Rockville, MD, USA). Miracle cure claims can delay a patient's definitive, evidence-based care, and misinformation about sunscreen or vaccine safety can cause people to forgo preventive precautions, Chou warned.

The motives for creating or sharing misinformation vary widely. "I would break things into two categories of misinformation", said Timothy R Rebbeck, Zhu Family Center for Global Cancer Prevention at the Harvard T H Chan School of Public Health, Boston, MA, USA. "One is malicious misinformation that is clearly intended to benefit political or economic goals. But most misinformation is really not malicious; it's based around a lack of understanding or fear of things that are very hard to understand."

Rebbeck founded the Cancer FactFinder to help patients and caregivers navigate claims about cancer in the nine languages that are most common in the Boston area. "The type of misinformation that affects different groups varies. Trust in the systems in health care would be quite different in, say, White suburban groups versus Black Americans who are underserved and have a history of systemic racism and discrimination. ... What people mistrust or how people perceive misinformation vary a lot."

In the future, Cancer FactFinder might tackle misinformation about cancer treatment, but for now the focus is on vetting claims about how to



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Lancet Oncol 2024

Published Online
January 11, 2024
[https://doi.org/10.1016/S1470-2045\(24\)00011-1](https://doi.org/10.1016/S1470-2045(24)00011-1)

For more on **Florida surgeon general Joseph Ladapo's misinformation about COVID vaccines** see <https://www.nytimes.com/2024/01/03/health/covid-vaccines-florida.html>

For the **Cancer FactFinder** see <https://cancerfactfinder.org>

For Dr Warner and colleagues' research on social media cancer misinformation see *Cancer* 2022; 13: 2540-48

For more on the halting of the Advancing Health Communication Science and Practice programme see <https://www.cbsnews.com/news/nih-halts-research-project-is-it-self-censorship/>

For the US National Cancer Institute's Cancer Information Service see <https://www.cancer.gov/contact>

lower one's risk of developing cancer. "We try to focus on those things that are both actionable and real, and try to move away from things that are rumour or innuendo", he explained. "Physical activity, obesity, smoking, vaccinations—the things that are really going to impact an individual's cancer risk as well as the population's cancer risk. That's where we need to focus our energy."

Not surprisingly, online merchants of supplements and herbal remedies are a major source of cancer misinformation. Warner and colleagues reported that a third of Pinterest sites using the phrases "cancer recipe" or "recipe for cancer" were selling products, including ones claimed to prevent, treat, or cure cancer. Ambiguous phrases like "cancer-busting" or "anti-cancer" were frequently employed, the researchers found.

"The most common misconceptions about cancer due to misinformation relate to diet and nutritional supplements", Warner said. "To the best of our knowledge, there is no individual food substance or supplement that can prevent, cure, or treat cancer."

While writing this News report, a search of Amazon.com identified several aloe vera-based products marketed as treatments for radiotherapy dermatitis, despite professional medical organisations' evidence-based recommendations against aloe's use for that purpose. Several of those listings also claimed that products were "infused with stem cells".

Like misinformation in general, the spread of misleading cancer claims is fuelled in part by widespread mistrust of expertise and authority. Successfully countering patients' vulnerability to cancer misinformation will involve rebuilding trust between clinicians and patients, and improving scientists' communication with the public, experts believe.

"Cancer is a frightening and complex diagnosis, and new patients and their

loved ones turn to the internet for information", said Renee DiResta (Stanford Internet Observatory, Stanford University, Stanford, CA, USA). "However, the intersection of distrust in medicine, gameable search results, personalised feeds, and the need for community make it very easy for people to potentially fall into an online world in which [they believe] doctors are lying to them, and wellness influencers are telling them the truth."

Curbing the spread of misinformation would likely require cooperation from social media companies. Some, like Meta (Facebook, Instagram), TikTok, and YouTube, say they reduce misleading health information through content moderation and filtering algorithms that diminish the reach of misinformation or prioritise reliable sources. Moderators review flagged posts to determine what should be tagged with warnings or removed, and automatic detection of suspect keywords or phrases can prompt moderator reviews. Some platforms collaborate with independent fact-checking and news organisations to verify or call out claims.

But such efforts are far from universal. "Our research has shown that, at least on some platforms, cancer misinformation remains unchecked, particularly content related to dietary supplements and nutritional approaches for preventing cancer from occurring and managing symptoms of cancer or side effects of treatment", Warner said.

"There is a clear need to combat misinformation on social media platforms and while some platforms are starting to identify and remove misinformation, many challenges remain as to how to do this in a timely, unified, and effective way", Teplinsky said. Balancing the need to protect patients with constitutionally protected free speech is complex legal terrain. The Republican-controlled US House of Representatives has

investigated meetings between executive branch and social media firm officials to discuss how to curb misinformation, and Republican attorneys general and anti-vaccine groups have sued to stop such meetings, depicting them as examples of government censorship. That has had a chilling effect at some funding agencies. Last summer, the US National Institutes of Health abruptly halted its Advancing Health Communication Science and Practice health literacy programme, which would have funded research into health misinformation, among other work.

The NCI does not monitor cancer misinformation online but does continue to support research into the spread of misinformation, as well as the dissemination of factual, evidence-based information, Chou said. The NCI is currently funding studies of HPV vaccine misinformation and prostate cancer misinformation, for example. (The agency also provides a free [Cancer Information Service](#) for patients and caregivers. ASCO's patient information website, Cancer.Net, similarly provides timely, oncologist-approved information to help patients and loved ones make informed decisions.)

More research is urgently needed, Warner said. "It is difficult, if not impossible, to create effective interventions until we know more about who is most vulnerable to cancer misinformation and what kind of misinformation is most influential on cancer-related decisions and health behaviours."

There's also a pressing need for teaching critical thinking. "Most cancer quackery and misinformation try to represent cancer as being simple, with one solution", Gorski said. "People don't necessarily need to know the details of the aetiology, treatment, and prognosis of their cancer to understand when a claim sounds too good to be true."

Bryant Furlow