US inoculations with the Johnson & Johnson COVID-19 shot paused for ten days in April.

FREDERIC J. BROWN/AFP VIA GETTY

COMMUNICATING COVID VACCINE SAFETY POSES A UNIQUE CHALLENGE

Vaccine-hesitancy poll demonstrates the predicament researchers face in transmitting risk information.

By Ariana Remmel

Public confidence in the safety of COVID-19 vaccines dipped in the United States after government officials paused vaccinations with the Johnson & Johnson (J&J) shot last month, according to a poll. During the ten-day hiatus, officials explored whether the vaccine was linked to a rare type of blood clot, but they ultimately deemed the jab safe and gave the green light to resume its use. After the pause began, 7% of unvaccinated adults who were surveyed said that the news about blood clots made them less likely to want any COVID-19 shot, according to data published by the Kaiser Family Foundation (KFF; see go.nature.com/3fyfaoi).

The incident demonstrates the knife-edge that public-health authorities have been walking since COVID-19 vaccines became available late last year. Vaccines represent a way to end the COVID-19 pandemic and protect individuals, so authorities would like people to sign up for them. But the shots come with risks that need to be communicated transparently, to maintain trust and uphold scientific ethics, says Hilda Bastian, an independent scientist who studies evidence-based medicine in Victoria, Australia.

Public-health specialists must always strike a careful balance when communicating about vaccine safety, but the enormous scale of the COVID-19 vaccine roll-out means that safety data are evolving fast — so researchers are scrambling to share developments transparently and clearly with the public. And they worry that with the rise of anti-vaccination movements, their messages might be used or interpreted to fuel misinformation campaigns. Those who spoke to *Nature* say that because the stakes are so high for COVID-19, explaining vaccine risk has been especially fraught. "It's a minefield," says Bastian.

Given the intense news coverage, "it's not surprising that people might have questions".

Kathryn Edwards, a vaccinologist at Vanderbilt University School of Medicine in Nashville, Tennessee, who has been a vaccine-safety consultant for 40 years, agrees. "I have not worked harder in my life," she says.

US officials paused inoculations with the J&J vaccine last month so that researchers at the US Centers for Disease Control and Prevention and the US Food and Drug Administration could evaluate 6 cases of a rare type of blood clot reported among 6.8 million people who had received this jab. The pause followed an announcement by the European Medicines Agency that linked the Oxford–AstraZeneca COVID-19 vaccine to reports of a similar blood-clotting condition.

The effects of a pause

By the end of the pause, US officials had identified 15 cases of a rare but severe condition called thrombosis with thrombocytopaenia syndrome (TTS) in people who had received the J&J vaccine. The highly specific hallmarks of TTS are clots in unusual parts of the body, such as the brain or abdomen, combined with low blood-platelet levels. The cases occurred exclusively in women between the ages of 18 and 59. Still, officials decided that the benefit of protection against COVID-19 imparted by the vaccine outweighs the remote risk of TTS, so they lifted the pause and asked healthcare providers to update information given out with the J&J shot to include warnings about the condition.

During the pause and the week after it was lifted, the KFF, a non-profit health-policy organization based in San Francisco, California, polled around 2,100 adults across the United States about whether it had affected their stance on COVID-19 vaccines. Although 69% of respondents expressed confidence in the other two vaccines being administered in the country — the Pfizer–BioNTech and Moderna shots — only 46% said the same for J&J. Among the subset of respondents who had not yet been vaccinated, roughly 20% said that the pause had changed their view of at least one of the COVID-19 vaccines in some way (see 'New hesitancy').

Given the intense news coverage of safety concerns around J&J, "it's not surprising that people might have questions", says Katherine Schaff, who studies public-health communication at Berkeley Media Studies Group in California. She emphasizes that confidence in the other available COVID-19 vaccines remains high, and the J&J pause is ultimately evidence of vaccine safety-monitoring systems working as they should. But Schaff adds that the new hesitancy described in the KFF poll is evidence that more can be done to make sure people have access to transparent communication about vaccine safety.

Risk is not only a number

One challenge public-health authorities face is putting risk into context without seeming to dismiss people's worries, says Heidi Larson, an anthropologist at the London School of

Hygiene & Tropical Medicine who specializes in risk and decision science. Even if authorities say the likelihood of a severe reaction is one in a million, she says, what people want an answer to is, "What does that one in a million mean for me or someone in my family?"

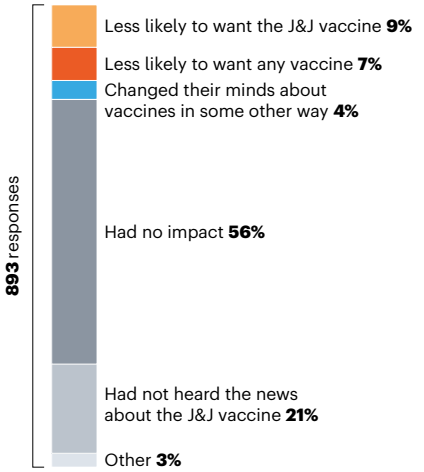
Providing that context can be tricky because risk perception is highly subjective, says Alexandra Freeman, executive director of the Winton Centre for Risk and Evidence Communication at the University of Cambridge, UK. There are two elements of risk that people need to understand to make decisions, she says: the likelihood of something happening, and the impact of something happening. For example, the likelihood of severe, influenza-like symptoms after a vaccine injection might be one in ten, but if they happen, those symptoms could have a larger impact for a single parent without childcare support than for someone able to take time to recover.

Public-health specialists told *Nature* that the key to increasing public trust continues to be transparency. In a study of how communication about vaccine efficacy affected people's decisions to get a COVID-19 shot, Freeman and her colleagues found that being transparent about the uncertainties made no difference to whether or not a person got a vaccine (J. Kerr *et al. Vaccines* **9**, 379; 2021). But, says Freeman, "we did find that people felt that they were more informed and felt more confident in their decision-making when they were given more informative communication".

Additional reporting by Heidi Ledford.

NEW HESITANCY

After US inoculations with the Johnson & Johnson (J&J) shot were paused owing to worries over blood clots, unvaccinated Americans' hesitancy to get a COVID-19 jab increased, according to a survey.



SOURCE: KAISER FAMILY FOUNDATION COVID-19 VACCINE MONITOR

OPEN-ACCESS PUBLISHER PUSHES TO EXTEND CLOUT BEYOND BIOMEDICINE

PLOS will launch five journals and a business model that aims to spread the cost of publishing more fairly.

By Holly Else

Non-profit life-sciences publisher PLOS is gunning for a bigger share of science beyond the biomedical realm, with the launch of five journals in fields where open science is less widely adopted. They will be its first new titles in 14 years. It is also piloting a new open-access business model, in a bid to spread the cost of publishing more equally among researchers.

The new business model is the first shake-up at the publisher for a while, and has been eagerly anticipated. "PLOS is a publisher that punches above its weight," says Michael Clarke, managing partner at publishing consultancy Clarke & Esposito in Washington DC. "Since their inception, they have had an outsized influence on the industry. After a period of quiescence, it is good to see some long-overdue innovation," he adds.

In the 20 years since its inception, PLOS has blazed a trail that many mainstream journals have followed, making papers free to read and drawing revenue from publishing charges rather than subscriptions. But some warn that other publishers might be less likely to adopt the new model — which requires institutions to sign up to long-term publishing agreements — owing to its complexity.

Open-access pioneer

PLOS started life in 2001 as the Public Library of Science, in response to an open letter signed by almost 34,000 scientists calling for an online repository of life-sciences papers. In 2003, it launched its first journal, *PLoS Biology*, which was funded using an unconventional business model — asking authors to pay an article-processing charge to make their papers freely available for anyone to read.

Over the past 14 years, PLOS has maintained the same portfolio of seven life-sciences journals covering biology, medicine, computational biology, genetics and pathogens. Some of its more selective journals, such as *PLoS Medicine* and *PLoS Biology*, have run at a loss, but the publisher generated more income by launching the mega-journal *PLoS ONE*, which accepts scientifically valid research from all disciplines.

The five new journals focus on water, climate, sustainability, global public health and digital health. Introducing non-life-sciences titles will allow PLOS to diversify, says Clarke. "This is significant in thinking about the possible future directions of the organization." In the years since *PLoS ONE* was launched, he adds, other publishers have mimicked the mega-journal concept and eroded PLOS's market share. The publisher's financial history is chequered. It first broke even in 2010; in recent years it has fallen into deficit, with 2019 the first year that it made an operating surplus since 2015.

Spreading the cost

The journal launches come as PLOS continues to pilot a business model that it introduced last year. Under the scheme, known as Community Action Publishing, universities sign an agreement that gives their researchers unlimited publishing in *PLoS Medicine* or *PLoS Biology* for a fixed fee.

The membership fee for individual institutions varies from around US$350 to almost $40,000 for the three-year pilot scheme. The cost is based on the publishing history of an institution's researchers over the past six years, and takes into account whether scientists were corresponding or contributing authors. Profits are capped at 10%, with any revenue exceeding this being given back to members. Researchers publishing in these titles from institutions without an agreement will pay a non-member publishing fee — similar to an article-processing charge — that will increase year on year.

The idea behind the new model is that the cost of publishing a paper is spread more equally across all of the authors' institutions, rather than the corresponding author's institution or funder footing the bill, as is standard with an article-processing charge. PLOS says that as more members join the scheme, it will become cheaper for researchers to publish papers. So far, more than 75 institutions in 8 countries have signed up.

PLOS's chief publishing officer, Niamh O'Connor, says that PLOS hopes to circumvent the idea that open access moves the cost of publishing a paper from the reader to the author. "While the article-processing model has allowed open access to develop, we don't see that as the future," she says. "We are working to a future where those barriers are removed."