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As the coronavirus has spread around the world, so has misinformation.

FIGHTING CORONAVIRUS MISINFORMATION

Bogus remedies, myths and fake news about COVID-19 can cost lives. Here's how some scientists are fighting back. **By Nic Fleming**

Eating sea lettuce or injecting disinfectant won't prevent you from getting COVID-19. Holding your breath for ten seconds is not a test for SARS-CoV-2. The rapid global spread of COVID-19 has been accompanied by what the World Health Organization has described as a "massive infodemic". Huge demand for information on the disease, its toll on health-care systems and lives, and the many unanswered questions about a virus that was discovered only in December, have created the perfect breeding ground for myths, fake news and conspiracy theories. Some can be dismissed as ludicrous and largely harmless, but others are life-threatening.

Scientists are well placed to help to hold back the tide of COVID-19 misinformation — but should they get involved in time-consuming, and sometimes bruising, efforts to do so? For those who sign up, how can coronavirus untruths best be confronted? Should scientists restrict interventions to their areas of expertise? Is countering falsehoods about the pandemic purely a public service, or might there be career benefits?

"I think scientists need to get out there on the front line, if they are comfortable doing so," says Jevin West, who is a data scientist at the University of Washington in Seattle. "By countering misinformation about COVID-19, they can help policymakers avoid introducing harmful policies, improve public understanding of the pandemic and, most importantly, save lives."

Among the many changes wrought by COVID-19 is a widespread increase in news consumption. A March survey of 13 countries by market-research company GlobalWebIndex found that, as a result of the pandemic, 67% of those surveyed are watching more news coverage, and that half of that subset are spending significantly more time doing so (see go.nature.com/2yznjku). We're "looking for good news or inside information about COVID-19 because it affects our health, and that of our friends and families," says West. "That makes us more vulnerable to being fooled."

West co-created Calling Bullshit, a course

on how to spot and counter false appeals to scientific and statistical evidence (see 'Eight ways to spot misinformation'), and in December, co-founded and became director of his university's new Center for an Informed Public, whose core aims include researching rumours and misinformation during crises. It's been a busy few months for West and his colleagues.

The misinformation world

False medical claims are a key focus for those seeking to minimize potential harms. Researchers at the Taiwan FactCheck Center have, for example, spent a large proportion of their time debunking reports about fake remedies and tests since late January. Examples include claims that smelling sesame and other plant oils, breathing in steam or cleaning the nostrils with salty water can kill SARS-CoV-2 before it reaches the lungs.

Some who share myths are simply misguided, but others are driven by profit. In March, the US Food and Drug Administration warned companies and individuals, including Alex Jones, owner of the fake-news website Infowars, and televangelist Jim Bakker, to stop touting the benefits of unproven COVID-19 treatments such as colloidal silver, which they were selling. Another way to profit from fake news is advertising revenue. "About half of the disinformation we see is about people trying to produce viral content to get clicks to direct others to a website full of Google ads," says Giovanni Zagni, director of Facta, a new Italian fact-checking website. Zagni says the site has focused about 90% of its content on COVID-19 since its launch on 2 April.

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Many COVID-19 myths seem to be politically motivated, such as the reports that SARS-CoV-2 either escaped from the Wuhan Institute of Virology in China or was a bioweapon created deliberately in the country. A survey of US residents conducted in mid-March found that 6% thought the virus was accidentally created in a laboratory, and 23% that it was developed intentionally (see go.nature.com/2zf4v4d).

Scientists might have more impact when confronting myths that are less political. "If it's something crazy, like the virus is a bioweapon created by Barack Obama, I think scientists are better off leaving that to others and spending their time in the world of science," says West. Scientists can offer their expertise to journalists and fact-checkers who are debunking misinformation.

But should scientists attempt to counter misinformation across fields, or stick to their own? The debate over whether researchers should 'stay in their lane' has, at times, become heated during the COVID-19 pandemic.

In March, the UK-based Science Media Centre, which provides journalists with comments and briefings from scientists, asked its network of experts to stick to their disciplines when responding to media queries about COVID-19. Others, such as West, disagree. "We should encourage, not discourage, scientists to 'step outside their lane', especially during a worldwide crisis," he says. "As long as they are transparent about their expertise, there is much to gain from more scientists thinking about the problem."

Friendly fire

The tone of interventions can determine how they are received. In March, British singer and television personality Kerry Katona shared an Instagram post claiming that children with COVID-19 would be separated from their parents and taken to hospital alone. British doctor and television presenter Ranjit Singh responded: "Not true! Facts are facts! I've seen lots of confusion & misinformation about kids & #coronavirus recently," and posted a summary of the correct information from the UK Royal College of Paediatrics & Child Health. Katona thanked him and said she felt reassured. Zagni says that avoiding appearing confrontational or patronizing is key when seeking to change minds.

Subtle reminders about accuracy that avoid direct confrontation might prove effective. In a study currently awaiting peer review (G. Pennycook *et al.* Preprint at https://psyarxiv.com/uhbk9/; 2020), psychologist Gordon Pennycook, at the University of Regina in Canada, showed two groups of people from the United States a series of news headlines about COVID-19. Half of the headlines were true and half were false; the participants were not told which was which. On average in the first group, 47% of the accurate headlines and 43% of the inaccurate ones were considered worth sharing. The second group was asked to rate the accuracy of a single headline unrelated to COVID-19 before performing the same task. This seemed to make them more discerning, because they went on to say they would consider sharing 50% of the true reports and 40% of the untrue ones.

Many of those who have been inspired to use their training and experience as scientists to protect people from false information about COVID-19 simply want to contribute to reducing the loss of life and health. There could, however, be other benefits to getting involved in the defence of scientific truth. "Sharing your work and expertise, and engaging with the public, is an important part of being a scientist now," says Samantha Vanderslott, a health sociologist at the University of Oxford, UK. "Calling out fake stories can raise your profile."

Overall, West argues that researchers shouldn't allow professional considerations to get in the way when deciding whether to help in the battle against COVID-19 misinformation. "Ultimately, it really shouldn't matter, because lives, and trust in science, are at stake and we need to do something about it."

Nic Fleming is a science writer based in Bristol, UK.

EIGHT WAYS TO SPOT MISINFORMATION

Health sociologist Samantha Vanderslott at the University of Oxford, UK, studies how ideas, including misinformation, are spread through social media as part of her work on parental attitudes and decisions about vaccination. Here are her top tips on how to boost your immunity to online myths, lies, scams and hoaxes.

Source suspicion. Vague, untraceable sources, such as 'a doctor friend of a friend' or 'scientists say' without further details, should ring alarm bells.

Bad language. Most trustworthy sources are regular communicators, so poor spelling, grammar or punctuation are grounds for suspicion.

Emotional contagion. If something makes you angry or overjoyed, be on your guard. Miscreants know that messages that trigger strong emotions get shared the most.

News gold or fool's gold? Genuine scoops are rare. If information is reported by only one source, beware — especially if it suggests that something is being hidden from you.

False accounting. Use of fake social-media accounts, such as @BBCNewsTonight, is a classic trick. Look out for misleading images and bogus web addresses, too.

Oversharing. If someone urges you to share their sensational news, they might just want a share of the resulting advertising revenue.

Follow the money. Think about who stands to gain from you believing extraordinary claims.

Fact-check check. Go past the headlines and read a story to the end. If it sounds dubious, search fact-checking websites to see whether it has already been debunked.