

Now more than ever, scientists must speak up for science

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Abstract

In this post-truth era we live in, the validity of facts from climate change and evolution to the shape of the earth and even vaccine safety is challenged by misinformation. As scientists, we should make greater efforts to engage with the public and to counter misinformation through publicising correct information on social media as well as through traditional publishing channels. We can all start with our friends, family, and colleagues. As scientists, we have a responsibility to speak knowledgeably on scientific issues that affect us all.

In the 21st century, “fake news”, “alternative facts,” and disputes over the validity of everything

from climate change and evolution to the shape of the earth and even vaccine safety demonstrated that what you believe depends a lot on the source of the information (or misinformation).

Thus, what does it really mean to be misinformed or uninformed about science? The word “misinformation” can be defined broadly as being information, which is incorrect, potentially by accident. Whereas, “disinformation” refers to a specific type of misinformation that is intentionally false. However, the distinctions between these terms – as well as terms like “rumour” or “fake news” – have not always been clear in research pertaining to these topics.

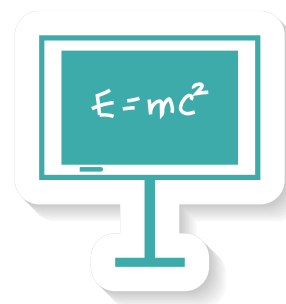
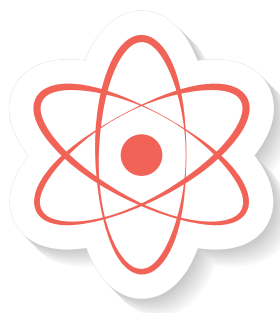
Moreover, a person who has been “misinformed” is often defined as someone believing in counterfactual claims while the “uninformed” is, simply not knowing. People can be both misinformed and uninformed simultaneously. For instance, they could be uninformed about how safety is a core element in all the phases of vaccine development while being misinformed about the facts of a specific vaccine-preventable disease

(i.e., “I had the flu shot, but I still had colds” – many viruses can cause colds and flu-like symptoms, not all colds and flu-like symptoms are caused by influenza/the flu). However, believing incorrect information about scientific topics (e.g., childhood vaccination) can have real-life consequences, especially if the person is also vocal and politically active.

Early this year, the World Health Organization (WHO) released a list of global health threats for 2019.¹ Unlike some of the health challenges on the list, at least one, vaccine hesitancy, is solvable. Despite WHO’s warnings, we are now seeing a return of vaccine-preventable diseases in many parts of the world, much of it because of mostly unopposed anti-vaccination groups, historical amnesia, widespread misinformation, and the rise of populist regimes spearheading the notion of “medical freedom” from vaccines.

So, what is behind the decline of trust in vaccines? There are well-funded and well-organised antivaccine groups in the United States and Europe with over 400 internet websites and

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social media anti-vaccination groups injecting fear into parents about the dangers of vaccines and fake conspiracies about the vast cover-up by the governments. Social media also creates insular bubbles of information and online echo chambers where ideas and misinformation are easily reinforced because of the absence of diverse viewpoints. Rumours spread not only through social media and online networks but also via families and communities where the influence is much stronger, and we are paying the price in terms of global child health. The WHO reports more than 112,000 confirmed cases of measles worldwide, as of May 2019 – a 300% increase from the 28,124 cases this time in 2018.²

Therefore, to counter the populist rhetoric, we should emphasise how children have a fundamental right to be protected against deadly infections. This right trumps parental choice and “medical freedom.” Scientists and scientific associations should anticipate campaigns of misinformation and proactively create online strategies to counter them when (not if) they occur. We also need to become better at communicating scientific data – so we need to seek the assistance of social science and communications experts to know how the public values news headlines versus videos clips or tweets.

Scientists should be speaking up about all issues that affect our lives. Now more than ever, scientists should be constantly exposing misinformation, alternative facts, and pseudoscience. We may have separate roles in the organisations we work with or work for, but a scientist’s job is not only to analyse laboratory data, write manuscripts, prepare dossiers, or build a long list of peer citations. As men and women of science, our real job should be to make great discoveries and share them with the rest of the world.

With all its flaws, social media has some benefits too. It allows people from all over the world to engage, keep up with new findings, and find new collaborators. Through Twitter, for example, I have started to know fellow science advocates children’s author Andrew Murray from

the UK, virologist Dr Susan Nasif from Belgium, Clinical Pharmacist Dr Artyom Korenevsky from Canada, Law Professor Dorit Reiss, and Pediatrician-Scientist Professor Peter Hotez from the US to name a few. With our combined reach of over 100,000 followers from all over the world, we are debunking pseudoscience and misinformation, one tweet at a time.

Organisations that fund science or represent scientists are beginning to encourage greater public interaction and scientific publishers are seeing the value of scientific communication for the public.

The current climate change poses challenging times for science and the principles that guide all scientific endeavours. Science, medicine, and public health are at risk in today’s era of fake news and science denialism.³ We should speak up when robust scientific findings are being disregarded or treated as mere matters of faith. It does not have to be on social media. We can all start with our friends, family, and colleagues. As men and women of science, we have a responsibility to speak knowledgeably on scientific issues that affect us all.

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Disclaimers

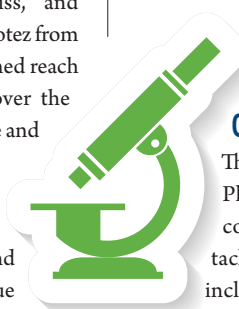
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Conflicts of interest

The author is employed by Takeda Pharmaceuticals International AG, a company developing vaccines that tackles problems in public health including dengue, norovirus, Zika, and chikungunya.

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