Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Building trust while influencing online COVID-19 content in the social media world

Published Online
April 21, 2020
https://doi.org/10.1016/S2589-7500(20)30084-4

With more than two million cases globally, the coronavirus disease 2019 (COVID-19) pandemic has resulted in unprecedented disruption to human society. Leaders from around the world have escalated from states of reluctant acceptance to states of emergency. Unlike historical pandemics, such as the 1918 H1N1 pandemic, COVID-19 is spreading across a highly connected world, in which virtually all individuals are linked to each other through the mobile phone in their pockets. Because of strict physical distancing measures, people are heavily reliant on maintaining connectivity using global digital social networks, such as Facebook or Twitter, to facilitate human interaction and information sharing about the virus. In what follows, we discuss some ways in which social media has undermined effective responses to COVID-19. We consider how various groups could respond to these challenges—especially government leaders, social media companies, and health-care providers. Ultimately, these actors each have roles to play in preventing social media from being weaponised to sow distrust and further endanger public health, while also ensuring that social media can fulfill its essential civic function of facilitating good faith political expression and discourse.

The idea of legitimacy has changed in the context of social media platforms. Users increasingly see trusted individuals within their peer networks who support production and exchange of valued information as authoritative sources of information. As that information is further disseminated, it often increases in its perceived legitimacy. This method of sharing and validating information contrasts with methods more directly controlled by intermediaries (eg, traditional media), who have specialised knowledge and specific responsibilities related to information verification and sharing.[1] This model of information sharing has become a driving feature of how public information related to health and medicine is produced and disseminated. In the COVID-19 pandemic, individuals are, not surprisingly, turning to this new digital reality for guidance.

Digital social networks have facilitated the spread of a different viral entity—misinformation. Scientific misinformation has been actively propagated as a means to destabilise trust in governments and as a political weapon.[2,3] In the few months since the first COVID-19 cases, a broad range of misinformation has spread across traditional media and social media in what WHO has called an infodemic (ie, excessive amounts misinformation, disinformation, and rumours that make it difficult identify reliable sources of information),[4] including the Trump administration referring to the epidemic as a hoax and political attack by opposition politicians.[5] Misinformation can have fatal consequences, as shown by the spread of premature evidence suggesting chloroquine is an effective treatment for COVID-19.[6] Given the exponential growth of the COVID-19 pandemic, the unchecked and rapid spread of misinformation, primarily fuelled by social media, presents a pressing public health challenge for COVID-19 control and mitigation measures, as confusion sowed by misinformation hinders public trust, consensus, and subsequent action.

Unlike the litany of debunked misinformation perpetuated by anti-vaccine activists, our understanding of COVID-19 is evolving continuously. As such, what qualifies as misinformation will be sensitive to new scientific discoveries and insights, making it in turn, harder to eliminate misinformation. That is, distinguishing misinformation from legitimate information is, at present, a moving target. The stakes are exceptionally high. With the scale and reach of the pandemic increasing exponentially, there is an urgent need to establish practices to effectively disseminate current, accurate information and quickly identify and root out outdated guidance or misinformation.

Actions taken by government agencies to partner with the social media giants Facebook, Twitter, and Instagram show how public–private cooperation to flag, fact-check, and even remove false or outdated information can be an effective way to inoculate these networks from impeding and actually worsening public health efforts. Social media companies have committed to regulate content in light of the pandemic.[7] Eliminating misinformation can help social media users gather and disseminate accurate information, helping them stay safe and reduce risk to others. Emerging tools, including crowd intelligence-based misinformation detection, can support social media

platforms to root out misinformation.[8] A more ambitious role for social media platforms would be to boost efforts by public health authorities by, for example, upranking links to recommendations from recognised health authorities, and downranking ads for essential limited medical supplies, such as face masks, to prevent hoarding.

Removing false claims about COVID-19 and elevating authoritative information are welcome steps to help protect public health in this extraordinary time. Content standards should be designed to allow diverse voices, including voices critical of government policy, while maintaining controls on the validity and authenticity of claims and recommendations. This aim is understandably complicated. In setting these standards, it is paramount to preserve social media's role as a platform for open, critical public discussion of policies, including good faith disagreements about how government or global health agencies are responding to the pandemic.

We anticipate that critiques will only become louder as citizens increasingly question the overall benefits, for example, of physical distancing. The risk of misinformation spreading will probably increase, as these tensions between public health authorities and the public increase. Social media provides an important platform to ensure that citizens have a voice and promote public trust in the transparency and accountability of policy making.[9] As public health practitioners, we must ensure that measures strike an ethically appropriate balance between protecting speech and preserving and promoting public health.

Finally, because many are turning to social media for information and advice, the differentiation between individuals who are qualified to provide accurate information online and so-called armchair epidemiologists is increasingly difficult. Members of the lay public might try to identify the most seemingly qualified member of their close network as a trusted resource to vet information. These individuals might feel unequipped to respond effectively to misinformation that individuals are exposed to on social media. To dispel myths, one strategy for the lay public and trusted sources of information (ie, epidemiologists) is inoculation. Inoculation, in this sense, focuses on strengthening a person's attitudes and opinions to protect them from misinformation.[10] For example, a common myth circulating on social media is that COVID-19 was engineered in a lab. By affirming the proliferation of misinformation about COVID-19, one can also point to the use of conspiracy theory rhetoric. Such rhetoric characteristically suggests unsubstantiated links and invokes themes of unseen nefarious networks that act behind the scenes of the pandemic. Because of the ubiquitous nature of misinformation related to COVID-19, all members of these broad digital social networks (including government agencies, social media companies, health-care providers, and the consumers or propagators of information themselves) share in the responsibility to help address the broader implications of this pandemic and the underlying infodemic to strengthen community resiliency.

We declare no competing interests.

Copyright © 2020 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY-NC-ND 4.0 license.

*Rupali Jayant Limaye, Molly Sauer, Joseph Ali, Justin Bernstein, Brian Wahl, Anne Barnhill, Alain Labrique
rlimaye@jhu.edu

Department of International Health (RJL, MS, BW, JA, AB, AL), International Vaccine Access Center (RJL, MS, BW), and Johns Hopkins Berman Institute of Bioethics (JA, AB, JB), Johns Hopkins Bloomberg School of Public Health, Baltimore, 21205 MD, USA

1 Eysenbach G. From intermediation to disintermediation and apomediation: new models for consumers to access and assess the credibility of health information in the age of Web2. *Stud Health Technol Inform* 2007; **129:** 162–66.
2 Guess A, Nyhan B, Reifler J. Selective exposure to misinformation: evidence from the consumption of fake news during the 2016 US presidential campaign. 2018. https://about.fb.com/wp-content/uploads/2018/01/fake-news-2016.pdf (accessed March 20, 2020).
3 Singer PW, Brooking ET. LikeWar: the weaponization of social media. New York, NY: Eamon Dolan Books, 2018.
4 Garrett L. COVID-19: the medium is the message. *Lancet* 2020; **395:** 942–43.
5 Egan L. Trump calls coronavirus Democrats' 'new hoax'. NBC News. 2020. https://www.nbcnews.com/politics/donald-trump/trump-calls-coronavirus-democrats-new-hoax-n1145721 (accessed March 20, 2020).
6 Man fatally poisons himself while self-medicating for coronavirus. Doctor Says. *The New York Times*. 2020. https://www.nytimes.com/2020/03/24/us/chloroquine-poisoning-coronavirus.html?smtyp=cur&smid=fb-nytimes&fbclid=IwAR3DvxiVrr_BbgGNqAmptMLC8RhiW4btzE4ruCRznkFYpj-oLIqtI8ELpxk&fbclid=IwAR2wultjKE4yzoHKKGynjmy-ODslfV7DIzF8surA5ZkpHDP0rKVPz2SFwUI (accessed March 24, 2020).
7 Shu C, Schieber J. Facebook, Reddit, Google, LinkedIn, Microsoft, Twitter and YouTube issue joint statement on misinformation. TechCrunch. 2020. https://techcrunch.com/2020/03/16/facebook-reddit-google-linkedin-microsoft-twitter-and-youtube-issue-joint-statement-on-misinformation/ (accessed March 24, 2020).
8 Guo B, Ding Y, Yao L, Liang Y, Yu Z. The future of misinformation detection: new perspectives and trends. *arXiv* 2019; published online Sept 9. DOI:1909.03654 (preprint).
9 Song C, Lee J. Citizens' use of social media in government, perceived transparency, and trust in government. *Public Perform Manag Rev* 2016; **39:** 430–53.
10 Cook J, Lewandowsky S, Ecker UKH. Neutralizing misinformation through inoculation: exposing misleading argumentation techniques reduces their influence. *PLoS One* 2017; **12:** e0175799.