COVID-19: Misinformation Can Kill

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INTRODUCTION

False messages about the COVID-19 pandemic may spread faster than the virus itself. From countless fabrications about coronavirus cures to fraudulent COVID-19 testing drive-throughs, misinformation is ceaselessly expanding. For instance, frequently circulating claims that *"COVID-19 is like the common cold"* are false. Scientific evidence indicates that, from its molecular structure to its high fatality rates, COVID-19 is not like the common cold.[1]

Fabricated messages can spread, not only through misinformation (false information that may inadvertently or purposefully mislead), but also through intentionally malicious processes, such as disinformation (false information that is intended to mislead).[2] While disinformation thrives during the COVID-19 pandemic, discerning whether those who spread erroneous messages intend to deceive can be challenging or impossible. Consequently, this commentary primarily refers to false and misleading messages as "misinformation." Intentionally misleading or not, misinformation can have far-reaching and disastrous consequences.

HOW WIDESPREAD IS THE MISINFORMATION PANDEMIC?

Today, anyone with access to the Internet is capable of not only consuming but also actively generating misleading material. While scientific research is more carefully filtered, any of us can post online, regardless of our expertise, accuracy, or ethics.

Should we trust the content we find online? By 2013, 72% of U.S. Internet-users reported searching for their health information online[3] and, by 2019, an estimated 80% of U.S. adults reported going online "at least daily."[4] However, the Internet has no gatekeeper – websites and social media platforms are rarely vetted. Once online, dangerous posts are immediately available to millions – often permanently. Even when refuted or removed, there is nothing to halt our oftentimes accidental propagation of and belief in misinformation.

Scientific findings can be difficult to consume and interpret, much less convey. From the average Internet-user to journalists to researchers, the fast-paced nature of the online world allows any one of us – often unintentionally – to misrepresent, falsify, or overdramatize health-related posts.

In short, separating accurate scientific facts from false, biased, or intentionally misleading content is frequently impossible.[5]

From links to and advertisements for empirically untested supplements to fabricated science resources and fallacious anti-viral devices, damaging content is persistently promoted. Whether the content is conveyed by fake experts or just the average social media user, misinformation is often disseminated and propagated to a level where it can obscure or even discredit robust evidence from truly credible resources.[6]

One brazen fraud created an inauthentic drive-in testing site where "volunteers" in deceptive gear swabbed for non-existent COVID tests.

WHY DO WE BELIEVE MISINFORMATION?

We live in a world replete with misleading content, including pseudoscience. Our willingness to believe some messages and discard others is influenced by past experiences, the limitations of our knowledge, and the accuracy of available data. Critically, there are a multitude of malicious methods that can facilitate the spread of and belief in misinformation (**Table 1**).

We all want the world to make sense. To reduce uncertainty and optimize decision-making, we tend to favor simple, unambiguous information over complex, ambiguous but accurate information. However, just because a message is straightforward does not mean that it is more accurate than a complicated picture. For instance, believing the falsehood that there is an easy cure for COVID-19 – like eating garlic – might be more appealing than the complicated, pessimistic reality that there is no current cure for this disease.

Also, we favor content confirming our existing beliefs, and we have difficulty searching for evidence to refute them. Seeking insight from inaccurate explanations can delude us to interpret unclear or misleading data to fit our expectations. We may fail to detect pitfalls of biased, random, or unrepresentative second-hand information, including content from mass media. Passive processing increases the likelihood of erroneously finding order and predictability in what is actually random or contradictory data.

Moreover, during rapidly evolving crises like the COVID-19

Table 1. How Misinformation Spreads: Malicious Methods

MALICIOUS METHODS	DEFINITIONS	MISINFORMATION EXAMPLES	CORRECTIONS
Deception	Inaccurate, false information that is presented as legitimate	**Untrue**: "COVID-19 can be transmitted through mosquito bites."	**True**: COVID-19 cannot be transmitted by mosquitos.
Create False Equivalence	Comparing logical, accurate arguments to illogical, inaccurate arguments	**Untrue**: "Scientists disagree – no COVID-19 consensus exists."	**True**: Scientists commonly disagree; however, there is widespread scientific consensus about COVID-19.
Favor Simplified Messages	Tendency to favor simple messages over complicated content	**Untrue**: "Do not take ibuprofen if you have the virus."	**True**: WHO initially said that those with COVID-19 should avoid ibuprofen, but later retracted this statement.
Amplify Unreliable Messages	Frequently flood Internet with the same malicious content	**Untrue**: "5G spreads COVID-19."	**True**: 5G technology does not spread COVID-19.
Downplay Risks	Underestimate risk, overestimate ability to overcome risk	**Untrue**: "COVID-19 is like the common cold."	**True**: COVID-19 is not like the common cold; much higher fatality rates than a common cold.
Mix Content Accuracy	Combine accurate and inaccurate information	**Untrue**: "COVID-19 can kill older people, but it can't harm young people."	**True**: COVID-19 can infect and be fatal at any age.
Impersonate Reliable Sources	Attribute misinformation to a reliable source or pretend to be a reliable source	**Untrue**: "Dr. Fauci said social distancing doesn't matter."	**True**: Dr. Fauci has been a major proponent of social distancing.
Non-Verifiable Predictions	Predictions about future events that cannot be proven or disproven	**Untrue**: "Schools will re-open in Fall 2020."	**True**: School re-openings depend on diverse, uncertain scenarios.

pandemic, governing health bodies may change their advice in response to the changing circumstances. Although sticking with the initial, unambiguous message may be easier, the evolving message is often more accurate. For example, the World Health Organization (WHO) initially warned against taking ibuprofen when one is diagnosed with COVID-19 – WHO later retracted this warning. This rapid change in messaging resulted in some favoring the initial, unambiguous message of "do not take ibuprofen" over the evolving, accurate message of "WHO initially said not to take ibuprofen, but this warning was retracted."[7]

WHAT ARE THE CONSEQUENCES OF BELIEVING MISINFORMATION?

Misinformation can be confusing and pernicious. Over time, false messages can erode public support and discourage adherence to evidence-based guidelines, foster mistrust in science and waste limited human and material resources.[5] A major consequence of spurious messages is skepticism of truthful accurate content and the legitimization of misleading content. Fictitious information might be presented as one side of an honest debate, creating a false equivalence.

Another striking consequence of misinformation is an increased risk for catastrophic but preventable outcomes during the COVID-19 pandemic. Seemingly harmless, well-meaning misinformation can be fatal. For instance, while optimism is emotionally crucial, overoptimistic messages

during health crises like a pandemic can result in detrimental decisions, such as lack of adherence to social distancing.[9]

WHAT CAN WE DO TO AVOID AND DETECT MISLEADING MESSAGES?

A pandemic of misinformation parallels the COVID-19 outbreak. Perpetrators disseminate non-existent virus and vaccine solutions, impairing intelligent responses to this crisis. Each of us must monitor our information consumption and actions and: (1) Seek accurate information from credible sources such as the CDC; (2) Know that reliable sources may change their messages as data evolves and updates; (3) Be wary of widespread misinformation on social media; (4) Don't click on links or attachments from unverified sources; (5) Be skeptical of unsolicited emails offering testing, products or requests for personal information; and (6) Reject online requests to pay by gift card or scammers posing as reps from WHO or CDC to trick users to download malware.

CONCLUSION

Science can be manipulated to promote disinformation. Uncertainty, angst, fear and confusion amidst relentless exposure to enormous amounts of diverse communications increase our vulnerability. Understanding the pervasive scope and strategy of unreliable and malicious information can aid us in confronting misleading content and mitigating its potentially catastrophic consequences.

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