



2022 ABIM FOUNDATION FORUM

FACT or **FICTION**
Strategies for the Misinformation Age

BACKGROUND PAPER

By Timothy Lynch, JD

This year's ABIM Foundation Forum will focus on health misinformation and its impact on the health care system, the medical profession, and the public. The topic of misinformation is inextricably tied to trust, which is the Foundation's primary focus area. A lack of trust can help explain why some people believe misinformation; in turn, the prevalence of misinformation further undermines the trust between patients and physicians that is needed for a well-functioning health system. A growing divide among Americans in their trust in science and respect for traditional authorities have fueled this cycle.

Of course, there have always been people who have spread false health information, and people who have believed it. Today, however, for a variety of reasons that will be discussed below, the scope and consequences of the problem have become far more pronounced. For example, experts estimate that millions of people have been exposed to deceptive material alleging that COVID-19 is a hoax, that experts have exaggerated its severity and spread, that masks are ineffective or can even elevate risk, or that vaccines can cause the disease, alter your DNA, or insert tracking devices.¹ It's estimated that between 2–12 million Americans have decided against vaccination due to misinformation, leading to a projected 1,200 hospitalizations and 300 deaths per day during the Delta surge.²

Concern about misinformation, and in particular its impact on the nation's ability to address the COVID-19 pandemic, prompted U.S. Surgeon General Vivek Murthy, MD to issue a 2021 "Advisory on Building a Healthy Information Environment." In it, he wrote: "Health information is a serious threat to public health. It can cause confusion, sow mistrust, harm people's health, and undermine public health efforts. **Limiting the spread of health misinformation is a moral and civic imperative that will require a whole-of-society effort.**"³ (emphasis added)

Participants at the Forum will have the opportunity to discuss the role that the health care system—and particular sectors and institutions within it—can play in that effort.

At the outset, it is worth distinguishing between misinformation and disinformation. As described in a recent National Academy of Medicine report on evaluating sources of information, misinformation refers to statements that conflict with the best scientific evidence available at the time, while disinformation describes a "coordinated or deliberate" effort to spread misinformation in order to gain "money, power, or reputation."⁴ In this paper, "misinformation" will generally be used to refer collectively to both categories of information.

This paper will discuss the nature of the problem of misinformation in the modern era, including its suspected causes, its impact, and the relationship between misinformation and equity. It will then review some of the responses to misinformation, including the reaction of regulatory bodies and the profession, and efforts with promise to reduce misinformation's harm.

"Limiting the spread of health misinformation is a moral and civic imperative that will require a whole-of-society effort."

– Vivek Murthy, MD, U.S. Surgeon General

- 1 D Scales et al. The Covid-19 Infodemic – Applying the Epidemiologic Model to Counter Misinformation. *N Engl J Med* 2021; 385:678-681. DOI: 10.1056/NEJMp2103798
- 2 R Bruns et al. COVID-19 Vaccine Misinformation and Disinformation Costs an Estimated \$50 to \$300 Million Each Day. Johns Hopkins Bloomberg School of Public Health, Center for Health Security. Available from: https://www.centerforhealthsecurity.org/our-work/pubs_archive/pubs-pdfs/2021/20211020-misinformation-disinformation-cost.pdf.
- 3 Confronting Health Misinformation: The U.S. Surgeon General's Advisory on Building a Healthy Information Environment (2021). Available from: <https://www.hhs.gov/sites/default/files/surgeon-general-misinformation-advisory.pdf>
- 4 R Kington, S Arnesen et al. Identifying Credible Sources of Health Information in Social Media: Principles and Attributes. National Academy of Medicine, July 16, 2021. Available from: <https://nam.edu/identifying-credible-sources-of-health-information-in-social-media-principles-and-attributes/>

THE PROBLEM

Misinformation is neither new nor distinctly American. Indeed, the history of medicine is littered with examples of ideas that were once commonly held and later definitively disproved. For example, in the Middle Ages, people widely believed that “bad air” caused plagues such as the Black Death—a belief that led them to wear perfume satchels around their nose and mouth, which served as little deterrent to the infected fleas that spread the bubonic plague.⁵

Misinformation has caused confusion and led people to decline COVID-19 vaccines, reject public health measures such as masking and physical distancing, and use unproven treatments.

Even as our scientific understanding has advanced, however, false health information—such as the debunked claims linking vaccination to autism—continues to circulate. And, as with all kinds of information, modern technological advances have dramatically quickened the speed and broadened the reach of that circulation.

The COVID-19 pandemic has demonstrated the increasing prevalence and power of misinformation, shedding light both on how it spreads and its impact. As stated in the Surgeon General’s report, “misinformation has caused confusion and led people to decline COVID-19 vaccines, reject public health measures such as masking and physical distancing, and use unproven treatments.”⁶

The World Health Organization defines our current state of affairs as an “infodemic”—the spread of “false or misleading information in digital and physical environments during a disease outbreak.” According to the WHO, it “causes confusion and risk-taking behaviors that can harm health. It also leads to mistrust in health authorities and undermines the public health response.”⁷

In one study of 8,001 people in the U.S. and the U.K., which was conducted shortly before initial governmental approval of COVID-19 vaccines, subjects were asked whether they planned to be vaccinated. A control group was shown scientifically-accurate information about the vaccines, while the other participants received misinformation questioning the vaccines’ safety or importance. Researchers reported that exposure to misinformation reduced the number of respondents who said they would definitely receive the vaccine to protect themselves by 6.2 percentage points in the U.K. and 6.4 points in the U.S., compared to the control group. (The results were similar when asked if they would definitely receive the vaccine to protect others – with ‘definitely’ responses declining by 5.7 (U.K.) and 6.5 (U.S.) points.)⁸

Of course, the findings of the study were borne out in reality. Although individuals’ choices about vaccination are influenced by many factors, misinformation has been a major influence for those who have not been vaccinated. A January 2021 survey by the Kaiser Family Foundation, which has tracked vaccine uptake and attitudes through the pandemic, found that 32 percent of adults either believed or were unsure about four or more false statements about COVID-19 and the vaccines. That figure rose to 64 percent among the unvaccinated.⁹

5 SCL Health, 6 Examples of Pseudo Medicine – And How Far We’ve Come. Available from: <https://www.sclhealth.org/blog/2018/08/6-examples-of-pseudo-medicine/>

6 Confronting Health Misinformation: The U.S. Surgeon General’s Advisory on Building a Healthy Information Environment (2021). Available from: <https://www.hhs.gov/sites/default/files/surgeon-general-misinformation-advisory.pdf>

7 World Health Organization. Infodemic. Available from: https://www.who.int/health-topics/infodemic#tab=tab_1

8 S Loomba, A. de Figueiredo, S.J. Piatek et al. Measuring the impact of COVID-19 vaccine misinformation on vaccination intent in the UK and USA. *Nature Human Behavior*. 2021; 5:337–348. <http://doi.org/10.1038/s41562-021-01056-1>

9 KFF COVID-19 Vaccine Monitor. Kaiser Family Foundation. Available from: [https://www.kff.org/coronavirus-covid-19/dashboard/kff-covid-19-vaccine-monitor-dashboard/#\(mis\)information](https://www.kff.org/coronavirus-covid-19/dashboard/kff-covid-19-vaccine-monitor-dashboard/#(mis)information)

The decision not to be vaccinated has carried extraordinarily severe consequences: hospitalizations and deaths from COVID-19 have been dramatically higher for the unvaccinated. During the Omicron surge, the CDC reported that in December 2021, unvaccinated adults were 97 times more likely to die from COVID-19 than fully vaccinated people with boosters.¹⁰ They were 23 times more likely to be hospitalized.¹¹

Of course, the misinformation problem goes well beyond COVID-19. Anyone with internet access can rapidly find false and misleading information about treatments for low back pain, childhood immunization for a host of diseases, and countless health conditions.

Indeed, to take a widespread example that long predates the pandemic, rampant misinformation about lower back pain has prompted patients around the world to seek care that is highly likely to do more harm than good. An editorial in the *British Journal of Sports Medicine* laid out 10 commonly-held but false beliefs about low back pain, and argued that these beliefs are associated “with greater levels of pain, disability, work absenteeism, medication use and healthcare seeking.”¹²

Cancer treatment is another area rife with misinformation. In one study, two cancer experts reviewed 50 of the most popular articles shared on social media on each of the four most common cancers. They found that 32.5 percent of the 200 total articles contained misinformation, and 30.5 percent contained harmful information. They also noted that the median number of engagements for articles with harmful misinformation significantly exceeded engagement with accurate articles.¹³ Another study of information shared through the personal Facebook pages of parents of children with Acute Lymphoblastic Leukemia found that one-third of the information shared was either not accurate (19 percent) or described unproven treatment modalities (14 percent).¹⁴

CONTRIBUTING FACTORS

The growth of the internet, particularly social media, has hyper-charged the rise of misinformation. The Surgeon General’s report highlighted a number of reasons why the rise of misinformation has gone hand-in-hand with the growth of the internet:

- Misinformation is often framed in a sensational or emotional manner that can produce a sense of urgency to react to it and share it with others, leading to its going viral.
- Algorithms that determine what users see online often prioritize content based on popularity, or on similarity to content users have previously viewed; thus, users who have been exposed to misinformation are more likely to see more of it over time, reinforcing misunderstandings.
- The growth in the number of places people go for information makes it harder to find and correct it.¹⁵

10 SciCheck’s COVID-19/Vaccination Project. FactCheck.org. Available from: <https://www.factcheck.org/2022/02/scicheck-latest-cdc-data-unvaccinated-adults-97-times-more-likely-to-die-from-covid-19-than-boosted-adults/>

11 Morbidity and Mortality Weekly Report. Centers for Disease Control and Prevention. Available from: https://www.cdc.gov/mmwr/volumes/71/wr/mm7105e1.htm?s_cid=mm7105e1_w

12 P O’Sullivan, et al. Back to Basics: 10 Facts Every Person Should Know about Back Pain. *British Journal of Sports Medicine* 2020;54:698-699.

13 S Johnson et al. Cancer Misinformation and Harmful Information on Facebook and Other Social Media. *J Natl Cancer Inst.* 2021 Jul 22;djab 141. doi: 10.1093/jnci/djab 141.

14 E Gage-Bouchard et al. Is Cancer Information Exchanged on Social Media Scientifically Accurate? *J Cancer Educ.* 2018 Dec; 33(6):1328-1332. doi: 10.1007/s13187-017-1254-z

15 Confronting Health Misinformation: The U.S. Surgeon General’s Advisory on Building a Healthy Information Environment (2021). Available from: <https://www.hhs.gov/sites/default/files/surgeon-general-misinformation-advisory.pdf>

Researchers have demonstrated that online, lies spread faster and more widely than the truth. A study of about 126,000 stories that circulated on Twitter over an 11-year period showed that the top 1 percent of false stories diffused to between 1,000 and 100,000 people, while true statements rarely diffused to more than 1,000.¹⁶ This means that many more people shared false statements than true ones; in fact, it took about six times as long for the truth to reach 1,500 people as a falsehood. The authors attributed this to the novelty of the false news, and found that bots were actually no more likely to spread false stories than accurate ones—it was human users fueling the spread of misinformation.

Skepticism about science could be considered both a cause and an effect of misinformation's rise.

Social media users also demonstrate undue confidence in the information they find. Close to 80 percent of Snapchat and TikTok users view those channels as important sources of reliable vaccine-related information; about 3 in 10 rely only on their “gut instinct” in evaluating the trustworthiness of a source.¹⁷

Skepticism about science could be considered both a cause and an effect of misinformation's rise. As false information causes some to doubt particular scientific findings, those doubts can then open the door for larger questions about the scientific enterprise. Many Americans expressed skepticism about scientific findings well before the pandemic; in one 2016 survey, fewer than 40 percent of adults expressed “a lot” of trust in information from scientists about climate change or genetically-modified foods.¹⁸ This lack of trust allows misinformation to find a ready audience.

A lack of confidence in traditional media can also be seen as a contributor to Americans' willingness to believe false claims. Only 7 percent of Americans say they have a “great deal” of trust and confidence in newspapers, television and radio reporting, with an additional 29 percent expressing a “fair amount” of trust and confidence. A full 34 percent report having “none at all.”¹⁹ Although much of this distrust can be attributed to political divisions within American society, observers have also suggested that when it comes to health reporting, the media has not always earned public trust. “My sense is that of all the categories of ‘fake news’, health news is the worst,” Kelly McBride, the Senior Vice President of the Poynter Institute, told *The Atlantic* magazine. “There's more bad health news out there than there is in any other category, [and] reliable sources on other topics are [sometimes] really bad on health care news.”

16 S Vosoughi, D Roy and S Aral. The Spread of True and False News Online. *Science*. 2018;359:1146-1151. <http://doi.org/10.1126/science.aap9559>

17 M Shaw. Let's Talk About This Infodemic of Misinformation, Experts Agree. *AJMC*. November 6, 2021. Available from: <https://www.ajmc.com/view/let-s-talk-about-this-infodemic-of-misinformation-panel-agrees>.

18 B Kennedy, C Funk. Many Americans are Skeptical about Scientific Research on Climate Change and GM Foods [Internet]. Washington (DC): Pew Research Center; 2016 Dec 5 [cited 2018 Apr 23]. Available from: <http://www.pewresearch.org/fact-tank/2016/12/05/many-americans-are-skeptical-about-scientific-research-on-climate-and-gm-foods/>.

19 M Brennan. Americans' Trust in Media Dips to Second Lowest on Record, Gallup, October 7, 2021. Available from: <https://news.gallup.com/poll/355526/americans-trust-media-dips-second-lowest-record.aspx>

EQUITY

As with so many other failings in American health care, the consequences of misinformation can be distributed unevenly. The Surgeon General's report noted that distrust of the health care system due to experiences with racism and other inequities may make it easier for misinformation to spread in some communities.²⁰ Again, the pandemic experience reinforces this.

A June 2020 report from Brandi Collins-Dexter, a leader at civil rights organization Color of Change and a visiting fellow at Harvard's Shorenstein Center on Media, Politics and Public Policy, showed that "harmful inaccuracies about COVID-19 [were] metastasizing in Black online spaces."²¹ These included "four predominant narratives spreading in Black communities" in the U.S.: (1) that Black people could not die from COVID-19; (2) that the virus was 'man-made' for the purpose of population control; (3) that it could be contained through the use of herbal remedies; and (4) that 5G radiation was its root cause. Some of the misinformation was targeted to the community by outsiders, while some grew from within Black communities.

Collins-Dexter argued that "the health misinformation surrounding COVID-19 poses an immediate threat to the health of Black people, and is a symptom of an information ecosystem poisoned by racial inequality." Specifically, she said that the history of mistrust in the health care system and the mainstream media left Black Americans more vulnerable to believing false health information, and pointed to a failure of tech companies to institute policies and restrict accounts of those spreading misinformation.

UCLA researchers conducted a set of focus groups in late 2020 and early 2021 with participants who were Native American, Black/African American, Filipino, Hispanic and Pacific Islander, to learn more about how people of color were making decisions about COVID-19 vaccination. In their discussions, participants raised concerns about their lack of trust in information sources and expressed fears about vaccination that were based on misinformation they had encountered about vaccine safety and development, such as that the vaccines had overwhelmingly been tested on white patients. Among other things, the researchers recommended engaging community partners to help deliver trustworthy messaging and information about vaccines, and ensuring that information was timely and accessible.²²

Hispanic Americans may also have been more exposed to misinformation because they are more likely to use social media as primary source of information about COVID-19. First Draft, a research group, has argued that the history of discrimination and medical racism, plus a lack of access to health care, may have created "a foundation of doubt and mistrust that allows misinformation about COVID-19 vaccines to flourish on social media."²³ An April 2021 poll by Voto Latino found that slightly more than half of unvaccinated Hispanics believed the vaccine was unsafe – 67 percent among those who primarily spoke Spanish. That being said, other factors depressed vaccination rates, such as fears of drawing the attention of immigration authorities or missing work.

The researchers recommended engaging community partners to help deliver trustworthy messaging and information about vaccines, and ensuring that information was timely and accessible.

20 Confronting Health Misinformation: The U.S. Surgeon General's Advisory on Building a Healthy Information Environment (2021). Available from: <https://www.hhs.gov/sites/default/files/surgeon-general-misinformation-advisory.pdf>

21 B Collins-Dexter. Canaries in the Coal Mine: COVID-19 Misinformation and Black Communities. June 24, 2020. Available from: <https://shorensteincenter.org/canaries-in-the-coal-mine/>

22 S Carson et al. COVID-19 Vaccine Decision-making Factors in Racial and Ethnic Minority Communities in Los Angeles, California. *JAMA Network Open*. 2021;4(9):e2127582. doi:10.1001/jamanetworkopen.2021.27582

23 G Mochkofsky. The Latinx Community and COVID-Disinformation Campaigns, *The New Yorker*, January 14, 2022.

RESPONSES TO MISINFORMATION

The Profession's Response

Widespread belief by patients in myths and false information creates an obvious challenge for physicians and other clinicians, who must find a way to build or retain trust with patients while seeking to persuade them to abandon misconceptions that they bring to their visits. Indeed, misinformation poses a significant threat to the physician-patient relationship by diminishing patient trust in (and regard for) physicians' expertise.

As misinformation expert and former Forum keynote speaker Adam Berinsky, PhD, Mitsui Professor of Political Science at MIT, and Richard J. Baron, MD, the President and CEO of the American Board of Internal Medicine (ABIM) and ABIM Foundation, have written: "What happens when the legitimacy of expertise—both in medicine and in science more generally—is threatened by new sources of information that are easily accessible but not scientifically vetted...? There is a real danger that alternative pillars of trust and authority are emerging that are not based in science and will threaten physicians' ability to earn the trust of their patients."²⁴

The Aspen Institute's blue-ribbon committee, which looked at misinformation across society, placed a particular emphasis on addressing misinformation harms from "empirically grounded domains" such as public health. In such domains, it called for "professional bodies with established standards and domain expertise" to evaluate claims for quality and accuracy.²⁵ The commission sought "accountability norms" in which professional and other leaders "create personal and professional consequences within their communities," and specifically called on "professional standards bodies like medical associations to hold their members accountable when they share false health information with the public for profit." Such actions can produce "greater trust in systems, and accountability, both for those who may cause harm, but also for those holding them to account, because their actions are public."

Leading organizations in the medical profession are taking actions that are consistent with this call, seeking to respond aggressively to false and misleading statements by physicians about COVID-19 treatments and about the safety and efficacy of vaccination.

In July 2021, the Federation of State Medical Boards (FSMB) announced that "physicians who generate and spread COVID-19 vaccine misinformation or disinformation are risking disciplinary action by state medical boards, including the suspension or revocation of their medical license." FSMB noted the "high degree of public trust" that physicians possess and their obligation to "share information that is factual, scientifically grounded and consensus-driven for the betterment of public health."²⁶

In the ensuing months, at least 15 state medical boards announced their intention to discipline physicians who disseminated misinformation, with at least 12 taking such an action.²⁷ There has been significant pushback in some states, however, such as in North Dakota and in Tennessee, where Republican lawmakers threatened to disband the state medical board and passed legislation that made it more difficult for the board to investigate complaints.²⁸

24 R Baron, A Berinsky. Mistrust in Science – A Threat to the Physician-Patient Relationship. *New Eng J Med* 381;2. July 11, 2019.

25 Aspen Digital. Commission on Information Disorder: Final Report (November 2021). Available from: <https://www.aspeninstitute.org/publications/commission-on-information-disorder-final-report/>

26 Federation of State Medical Boards. News release, July 29, 2021. Available from: <https://www.fsmb.org/advocacy/news-releases/fsmb-spreading-covid-19-vaccine-misinformation-may-put-medical-license-at-risk/>

27 K Gooch. 67% of State Medical Boards See Rise in Complaints against COVID-19 Misinformation, Disinformation. *Becker's Hospital Review*, December 10, 2021. Available from: <https://www.beckershospitalreview.com/hospital-physician-relationships/67-of-state-medical-boards-see-rise-in-complaints-against-covid-19-misinformation-disinformation.html>

28 B Farmer. Medical Boards Pressured to Let it Slide When Doctors Spread Covid Misinformation. *Kaiser Health News*, Feb. 15, 2022. Available from: <https://khn.org/news/article/medical-boards-pressured-to-let-it-slide-when-doctors-spread-covid-misinformation/>

Similar legislation is pending in 24 states. Dr. Baron and Ezekiel Emanuel, MD published a commentary earlier this year decrying this trend, writing:

Changing state laws in the way Tennessee and North Dakota have already done means that licensed doctors who chose to make up any number of interventions based on their opinion—or on what they read on the internet or hear from a politician—will be free to offer those treatments on an equal footing with treatments that have been shown to work. No rational person should be in favor of that.²⁹

In April 2022, the FSMB approved a medical misinformation and disinformation policy that stresses the importance of state licensing boards retaining the authority to regulate physicians' conduct, and encourages licensing boards to adopt clear "expectations regarding the dissemination of misinformation and disinformation by licensees" that would enable them to take action against misinformation. The FSMB policy also encourages state boards to create non-disciplinary paths to respond to complaints about physicians and misinformation, to promote conversations with physicians who may unintentionally promulgate misinformation.³⁰

ABIM and other certifying boards have also engaged on the issue. In September 2021, ABIM issued a [joint statement](#) with the American Board of Family Medicine and the American Board of Pediatrics in support of FSMB's position. The statement also alerted the physicians that those boards certify that providing misinformation about the COVID-19 vaccine "may prompt their respective board to take action that could put their certification at risk." "Spreading misinformation or falsehoods to the public during a time of a public health emergency goes against everything our boards and our community of board-certified physicians stand for," the boards stated. The American Medical Association, the American Board of Medical Specialties, and other individual certifying boards have also made statements in support of FSMB's position. The American Board of Emergency Medicine disclosed that, as of mid-January, it was investigating 15 of its certified physicians based on complaints that they had spread inaccurate information related to COVID-19.³¹

Some have called for licensing boards to be more aggressive. The deBeaumont Foundation and No License for Disinformation, founded last year by a concerned emergency medicine physician, have proposed additional steps that these state boards should take to hold physicians accountable. These include making complaints about physician behavior public rather than treating them confidentially; enabling boards to investigate matters proactively rather than only upon the receipt of a complaint; and concluding investigations—which generally take months if not years—more quickly to combat the rapid spread and baleful influence of misinformation.³²

Efforts to Address Misinformation: Research and Practice

Although we can see the harm that misinformation causes in certain high-profile areas such as COVID-19 vaccination, there is much we do not know about the magnitude of its impact or how it affects demographic groups differently. We also do not yet know enough about—and would benefit from research on—cost-effective interventions that may mitigate those impacts and increase the spread and uptake of accurate health information.³³ However, there have been a number of studies related to misinformation in recent years, fueled by the pandemic, along with blue-ribbon commissions that have recommended mitigating actions.

29 R Baron and Z Emanuel. Politicians Should Not Be Deciding What Constitutes Good Medicine. Stat, March 7, 2022. Available from: <https://www.statnews.com/2022/03/07/politicians-should-not-be-deciding-what-constitutes-good-medicine/>

30 K Fiore. FSMB Adopts Misinformation Policy. MedPage Today. May 5, 2022. Available from: https://www.medpagetoday.com/special-reports/exclusives/98562?xid=nL_medpageexclusive_2022-05-05&eun=g335372d0r&utm_source=Sailthru&utm_medium=email&utm_campaign=MPTExclusives_050522&utm_term=NL_Gen_Int_Medpage_Exclusives_Active

31 R Rubin. When Physicians Spread Unscientific Information About COVID-19. JAMA. Published online February 16, 2022. doi: 10.1001/jma.2022.1083.

32 B Castrucci and N Sawyer. Covid Vaccine and Treatment Misinformation is Medical Malpractice. It Should Be Punished. NBC News.com, January 8, 2022. Available from: <https://www.nbcnews.com/think/opinion/covid-vaccine-treatment-misinformation-medical-malpractice-it-should-be-punished-ncna1287180>

33 A Harvey. Combatting Health Misinformation and Disinformation: Building an Evidence Base. Health Affairs Forefront: November 23, 2021. Available from: <https://www.healthaffairs.org/doi/10.1377/forefront.20211118.932213/full/>

We know something about who is most likely to fall prey to misinformation. On average, individuals who are more susceptible to health misinformation have less education, lower levels of health literacy and trust in health care, and more positive attitudes toward alternative medicine. People who believe misinformation on one topic are also more likely to believe it about other topics.³⁴ And once people believe misinformation, those false beliefs are very difficult to unseat; they tend to linger and influence behavior.³⁵

Despite the challenges inherent in the rapid spread and stickiness of misinformation, there are a few general approaches that experts recommend for addressing it. In his 2018 Forum lecture, Dr. Berinsky recommended relying on messengers who speak against their perceived interest in rejecting false claims. He offered examples of “unexpected messengers” such as mothers of children with autism who did not believe that vaccines caused the condition, or Republican legislators who disputed the allegation that the Affordable Care Act would authorize “death panels” to ration medical care.

Another promising general approach is “pre-bunking,” an attempt to inoculate people against false claims before they are exposed to them. This can be achieved by warning people—before they encounter a specific piece of false information—that the information is false, and explaining why propagators of the information might lie or be misinformed.

In a test of pre-bunking, researchers developed the game “Bad News,” which mimics a social media feed in order to teach participants how to distinguish between real and fake news headlines on politicized topics. After playing the game, participants have demonstrated an enhanced likelihood of identifying misinformation that lasts for a few months. When the COVID-19 pandemic struck, the researchers built a new version of the game, called “Go Viral!” Players pretended to be an information manipulator and practiced interacting with others on social media; they learned how emotional language, fake experts and conspiracy theories can be used to mislead.³⁶

Some other promising approaches have been tested in response to the tsunami of COVID-19 misinformation. One experiment found that an intervention designed to focus subjects’ attention on the accuracy of information significantly reduced their intentions to share inaccurate information related to COVID-19. Participants who were asked to rate the accuracy of a single unrelated headline at the beginning of the experiment subsequently made better choices about what COVID-19 information to share.³⁷ The authors suggested that the prompt made a difference because people often fail to consider the accuracy of content when deciding what to share; they also noted that people who are more intuitive or less knowledgeable about science are more likely to believe and share falsehoods.

Although it is not a panacea, simply increasing people’s exposure to reliable online health information can deliver benefits. In one study, Facebook users in the U.S. who were shown ads containing video messages from physicians and nurses about the dangers of travel during the 2020 holiday season reduced their travel, and COVID-19 infection rates in the intervention counties and ZIP codes decreased.³⁸ In another, international Facebook users who were exposed to accurate information showing that COVID-19 vaccine acceptance was on the upswing were more likely to demonstrate greater acceptance themselves.³⁹ There have also been positive outcomes from having clinicians text video messages with COVID-19 information to patients, including evidence that messages delivered by racially/ethnically concordant physicians increased COVID-19 related information seeking.⁴⁰

34 L Scherer et al. Who is Subject to Online Health Misinformation? A Test of Four Psychosocial Hypotheses. *Health Psychology*, 40(4), 274-84.

35 Anderson, C. A., et al., *Journal of Personality and Social Psychology*, Vol. 39, No. 6, 1980.

36 Z Abams. Controlling the Spread of Misinformation. *Monitor on Psychology*. 52:2 (March 1, 2021). Available from: <https://www.apa.org/monitor/2021/03/controlling-misinformation>

37 G Pennycook, J McPhetres, Y Zhang et al. Fighting COVID-19 Misinformation on Social Media: Experimental Evidence for a Scalable Accuracy-Nudge Intervention. *Psychological Science*. 31:7 (2020). Available from: <https://journals.sagepub.com/doi/full/10.1177/0956797620939054>

38 E Breza et al, Effects of a Large-Scale Social Media Advertising Campaign on Holiday Travel and COVID-19 Infections: a Cluster Randomized Controlled Trial. *Nature Medicine* 27, 1622-1628 (2021). Available from: <https://www.nature.com/articles/s41591-021-01487-3>

39 A Moehring, et al. Surfacing Norms to Increase Vaccine Acceptance. *PsyArXiv*. February 8, 2021. Available from: <https://psyarxiv.com/srv6t/>

40 M Alsan et al. Comparison of Knowledge and Information-Seeking Behavior After General COVID-19 Public Health Messages and Messages Tailored for Black and Latinx Communities. April 2021. *Annals of Internal Medicine*. 174:4.

Indeed, the identity of the messenger can be as important as the message being delivered. As one set of researchers put it: “Particularly in vulnerable populations characterized by attributes associated with race, economic status, and immigrant status, familiar community members or local leaders are likely to be more trustworthy than those from outside the community. Successful initiatives have involved bringing relevant community members together with health authorities to co-create communication and engagement strategies.”⁴¹ Participants in last year’s Forum learned about We Got Us, a Boston-based initiative in which Black health professional students, community members, and allies seek to empower the Black community through education about medical racism, COVID-19, and vaccines—this kind of messenger-focused effort could hold promise in working with particular communities to address misinformation problems.

This focus on local leaders has an intuitive appeal considering the polarization surrounding practically every government agency and national figure. For example, the public is nearly evenly divided in both its appraisal of the performance of Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases (52 percent approval/47 percent disapproval as of December 2021)⁴² and the CDC (50 percent responding that the CDC was doing a ‘good’ or ‘excellent’ job on COVID-19 in February 2022).⁴³

Messages themselves are more compelling when they communicate a simple bottom-line meaning, a ‘gist’ that listeners can easily grasp. When scientists talk about how an mRNA vaccine is like an operating system, listeners without a sophisticated understanding of science might misconstrue that message. Simply responding with factual corrections is unlikely to succeed. Rather, close listening and seeking to get to the base of patients’ concerns – “to understand what they mean, how it makes them feel, and why it is important to them” – can contribute to building trust.⁴⁴

The Virality Project, a collective of research institutions with experience working to identify and understand the spread of misinformation, included a number of recommendations for research institutions, public health partners, government, and information platforms in a **major report** on the spread of misinformation about COVID-19 vaccination. Renee DiResta, Research Manager at Stanford University and an Executive Editor of the report, will discuss these recommendations in this year’s Presidents’ Lecture. Among other things, the recommendations include:

- Focusing on countering or addressing misinformation themes rather than fact-checking individual incidents.
- Being transparent with the public about what remains unknown.
- Communicating personal stories about the benefits of vaccination, using data in a supporting role.
- Implementing a Misinformation and Disinformation Center of Excellence within the federal Cybersecurity and Infrastructure Security Agency.
- Having research institutions create a ‘tip line’ process to enable civil society and government partners to share observations about emerging misinformation narratives.
- Having tech platforms consistently enforce policies against public health misinformation, particularly against recurring actors.⁴⁵

41 H Larson, D Boniatowski. Why Debunking Misinformation Is Not Enough to Change People’s Minds About Vaccines. *Am J Public Health*. 2021;111(6):1058-60. Available from: https://www.medscape.com/viewarticle/951115?spon=42&uac=87981AK&impID=3414155&sso=true&faf=1&src=WNL_mdpls_210601_mscpedit_pub

42 L Saad. Justice Roberts Tops Federal Leaders in Americans’ Approval. Gallup, December 27, 2021. Available from: <https://news.gallup.com/poll/358373/justice-roberts-tops-federal-leaders-americans-approval.aspx>

43 A Durkee. Majority of Americans Find CDC’s Changing Covid Guidance ‘Confusing,’ Poll Finds Amid New Mask Questions. *Forbes*, ebruary 9, 2022. Available from: <https://www.forbes.com/sites/alisondurkee/2022/02/09/majority-of-americans-find-cdcs-changing-covid-guidance-confusing-poll-finds-amid-new-mask-questions/?sh=3971e4e22fe9>

44 H Larson, D Boniatowski. Why Debunking Misinformation Is Not Enough to Change People’s Minds About Vaccines. *Am J Public Health*. 2021;111(6):1058-60.

45 The Virality Project. Memes, Magnets and Microchips: Narrative dynamics around COVID-19 vaccines. Stanford Digital Repository. Available from: <https://purl.stanford.edu/mx395xj8490>.

The Virality Project’s report also includes a helpful categorization of narratives that have persisted over time in the anti-vaccination movement; it defines a narrative as “a story that connects a series of related events or experiences, providing compelling interpretations that can help people make sense of these events and experiences.” The four narrative categories are:

- **Safety:** claims that vaccines cause harm (such as stories that take rare adverse events and present them as common).
- **Efficacy and necessity:** claims that vaccines aren’t necessary or effective (such as stories about ‘breakthrough’ cases in which vaccinated individuals were infected with COVID-19, or arguments that natural immunity was preferable to vaccine-derived protection).
- **Vaccine development and government distribution:** claims that misrepresent vaccine production, distribution plans, and vaccine mandates (this included attempts to persuade members of racial or ethnic minority groups that the COVID-19 vaccines were being tested on them, taking advantage of their legitimate historical reasons for mistrust).
- **Conspiracy theories:** claims fueled by suspicion of authorities that suggest malicious intent in creating or requiring the vaccine (such as the rumor that Bill Gates was seeking to use the vaccine to implant tracking devices or microchips).

Intervention Example: The Infodemiology Approach

One intriguing response to misinformation goes by the name infodemiology, which was first introduced a few decades ago as a process for identifying areas with knowledge translation gaps between best evidence and practice. David Scales, MD, PhD, Assistant Professor of Medicine at Weill Cornell Medical College, who will be a panelist at the Forum, Jack Gorman, MD, Founder of Critica LLC, and Kathleen Hall Jamieson, Director of the Annenberg Public Policy Center at the University of Pennsylvania, are working to apply infodemiology to online medical misinformation. They note that the traditional model of public health communications—in which experts communicate with the public through carefully crafted messages—has been hopelessly undermined in today’s information environment. The idea of a passive audience has been supplanted by the reality that non-experts are routinely producing and finding audiences for their own commentary about science and health.⁴⁶

Infodemiologists would be responsible for addressing misinformation online in as close to ‘real time’ as possible. They could come from a wide range of backgrounds, such as community health workers, nurses, physicians, pharmacists, and community and faith leaders; they would be trained in the approach but it would not be their full-time task.

“People recognize that misinformation is a problem, but there isn’t really an infrastructure for how to address it,” Dr. Scales said. He said that social media companies need to be more rigorous about monitoring content, but expects that there would still be ‘outbreaks’ of misinformation that go viral, and that infodemiologists would seek to address.

The effort starts with surveillance of information networks where misinformation tends to spread. Dr. Scales and Dr. Gorman propose that specialty societies, health-related non-governmental organizations, and public health authorities all play a role in tracking misinformation and anticipating new areas for controversy. (Ideally, social media companies would give these researchers access to aggregated and deidentified data on the spread of misinformation.) Armed with these key topics to address, subject matter experts can offer infodemiologists the information they need to respond to false and misguided claims.

46 J Gorman, D Scales. Leveraging Infodemiologists to Counteract Online Misinformation: Experience with COVID-19 Vaccines. Harvard Kennedy School Misinformation Review. <https://doi.org/10.37016/mr-2020-92>

Dr. Scales and Dr. Gorman suggest that the most important attribute for infodemiologists “is the ability to be empathic and communicate complicated scientific concepts in non-technical ways.” As such, they propose that infodemiologists base their interventions on the principles of motivational interviewing—using open-ended questions to attempt to establish common ground with people who have embraced misinformation—and reflective listening, providing accurate facts and actively debunking disinformation. They have created a training course for potential infodemiologists that includes didactic modules and practice interventions with supervision.

“It’s wonderful if the primary commenter [spreading misinformation] changes their mind, but that’s not the goal,” Dr. Scales said. “Usually that person is a hardened acolyte. Our goal is to blunt what they’re saying so it doesn’t propagate in the information network; we want to influence bystanders sitting on the sideline reading it.” The role goes beyond seeking to blunt misinformation; it also includes seeking to promote accurate information in their networks.

Infodemiologists will do much of their work on the internet, since that is a key vector for spreading misinformation. From work that has already been done on COVID-19 vaccine misinformation, the authors have drawn a few conclusions to guide infodemiologists:

- The most effective interventions occur within a few hours of misinformation being posted; misinformation that is not immediately counteracted can be committed to long-term memory.⁴⁷
- Seek to ascertain where posters on social media sites fall on the scale of “readiness for change” (e.g., unlikely to vaccinate under any circumstances vs. skeptical but persuadable) and modify efforts accordingly, focusing on those who are not completely committed to their positions.
- Provide factually correct but not overly technical information; use stories and narratives where appropriate.
- Help guide target audience according to shared values of the group, such as addressing history of discrimination/empowerment of communities.

Although not strictly speaking an example of infodemiology, New York City has done work that highlights the potential power of surveillance of the information environment. City officials collected information about misunderstandings and conspiracy theories about COVID-19 that predominated in particular communities, mostly through reviewing public social media posts. They found campaigns specifically targeted to reduce vaccine uptake in Orthodox Jewish, Polish, and Caribbean communities, among others, and identified conspiracy theories in at least a dozen languages.

Officials then tailored vaccine drives based on what they learned, informing health department ad purchases, the placement of canvassers distributing literature about vaccines, and work with community liaisons to correct misunderstandings.⁴⁸ In one instance, the health department learned that many in Brooklyn’s Caribbean communities believed the vaccines caused infertility; after a coordinated effort to address that belief through town halls, phone calls and faith communities, vaccination rates among Black people in the targeted ZIP codes increased by 15 percent in a 6-week period in June-July 2021, slightly higher than the overall 11 percent increase in the city during that span.

Finding successful approaches to addressing misinformation is essential to our shared interest in building trust in our health care system, in science and in the patient-physician relationship.

47 S Pluviano et al. Misinformation Lingers in Memory: Failure of Three Pro-Vaccination Strategies. *PLoS One* 2017;12(7):e0181640.

48 M Gay. Not Everyone in New York Wanted the Coronavirus to Lose, *New York Times*, Oct. 31, 2021. Available at <https://www.nytimes.com/2021/10/31/opinion/vaccine-disinformation-new-york-city.html>.

CONCLUSION

Our experience of the last few years has demonstrated the huge toll that misinformation takes on health and on the public's confidence in their physicians and the health system. Finding successful approaches to addressing misinformation is essential to our shared interest in building trust in our health care system, in science and in the patient-physician relationship. The Forum will offer an opportunity to explore such approaches, allowing participants to learn more about what is already being done and to generate their own ideas and approaches. We hope this background paper provides helpful context and helps begin the process of education and idea development.

