



COMMENT

The importance of trustworthiness: lessons from the COVID-19 pandemic

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INTRODUCTION

In a time of myriad threats to the health and well-being of children and their families, pediatricians play a critical role in advancing scientific discoveries, communicating findings to improve public understanding, and integrating evidence into policy and clinical practice. As outlined in the Public Health Code of Ethics, “the effectiveness of public health policies, practices, and actions depends upon public trust gained through decisions based on the highest ethical, scientific, and professional standards.”¹ Multiple urgent issues requiring evidence and advocacy in pediatrics include: (1) inadequate access to primary and subspecialty care, (2) the ongoing coronavirus (COVID-19) pandemic and its associated disruption in education and social services, (3) vaccine confidence, (4) immigration (caring for children and families entering the United States), (5) climate change, (6) environmental toxins, (7) gun violence, and (8) the behavioral and mental health crisis. All of these threats are compounded by racism, social injustice, and inequities in our society and health care system. Moreover, there is a mounting imperative to protect medical science and its integrity in the age of social media and widespread misinformation. We must demonstrate trustworthiness as a requisite condition to foster trust.

Trust in medical science is at a critical crossroads as a result of heightened rhetoric and polarization in politics, the capacity of social media to blur the distinction between truth and fiction, and intensifying concerns about conflict of interest and scientific misconduct.^{2,3} While Americans reported decreased trust in physicians and the health care system over the last half-century,⁴ data from a 2019 Pew Research Center survey were promising, suggesting that public confidence in scientists was on the upswing, with levels far exceeding trust in media, business leaders, and elected officials.⁵ Public confidence in medical scientists was similar to that for scientists overall; 87% reported either a great deal or fair amount of confidence in medical scientists to act in the best interests of the public. Furthermore, there were no partisan differences in views of medical doctors or research scientists, in contrast to environmental scientists where wide political differences emerged. Despite generally positive views about scientists, most Americans remained skeptical about key areas of scientific integrity including transparency about potential conflicts of interest (especially for industry-sponsored research) and accountability for mistakes or misconduct. Importantly, Black and Hispanic respondents were more likely than

Whites to see professional or research misconduct as a “very or moderately big problem.”

The COVID pandemic may have further eroded trust as a consequence of the rapid growth in competing and contradictory information. A subsequent Pew Research Center survey conducted in April and May of 2020 documented growing partisan differences over trust in medical scientists since the COVID-19 outbreak.⁶ Among Democrats and Independents leaning to the Democratic Party, 53% had a great deal of confidence in medical scientists to act in the public interest, up from 37% in 2019. But among Republicans and Independents leaning Republican, only 31% had a great deal of confidence in medical scientists, similar to 2019. Most importantly, there were significant differences based on race and ethnicity with Black respondents reporting lower ratings of medical research scientists compared with White and Hispanic respondents, independent of the political party.

THE ROLE OF THE PEDIATRICIAN IN CLINICAL PRACTICE

Overall, Americans tend to trust practitioners who directly provide treatments and recommendations to the public more than researchers working in the same domains.⁵ For example, public trust in medical doctors is considerably stronger than in research scientists. These data bolster our urgent call to strengthen the pediatric physician-scientist workforce,⁷ a waning pipeline that is further threatened by the pandemic.⁸ While the Pew survey did not report whether trust in medical doctors differed according to race and ethnicity, differences have been reported in multiple studies over recent decades suggesting racial and ethnic disparities in interpersonal trust may contribute to health disparities across populations.^{9–11}

To our knowledge, measures of trust in pediatricians have not been compared with physicians in other disciplines. However, continuity of care and more annual visits are associated with higher trust among adult patients.^{11,12} Parents bring their children to the doctor’s office up to 11 times for well-child visits within the first 2 years of life. Accordingly, pediatricians are uniquely positioned to establish trust and credibility—hopefully engendering trust in medical science. Sisk and Baker provided a pediatric model for relationship maintenance and trustworthiness based on demonstrations of caring, fidelity, honesty, and competence.¹³ Of note, a study of low-income parents’ perspectives on how pediatricians screen for social determinants of health found that

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positive conversations took place in the context of building trusting, long-term relationships with pediatricians.¹⁴ Parents preferred discussing social needs with pediatricians in clinical settings rather than other professionals due to fears of discrimination and mistrust of legal, educational, and social service institutions. In particular, some parents associated social workers with the local child welfare agency and hence the risk of losing their children.

MISINFORMATION AND DISINFORMATION IN THE REALM OF SCIENCE AND HEALTH

The ubiquitous social media landscape has created an “infodemic,” an information ecosystem awash in endless opinion and misinformation.¹⁵ A study of verified true and false news stories on social media demonstrated that falsehoods diffused significantly farther, faster, deeper, and more broadly than the truth for all categories of information.¹⁶ This phenomenon is especially ubiquitous in science and health.^{17,18} The rise in violence in health care settings during the COVID-19 pandemic is fueled by misinformation.¹⁹ Those who advance science can no longer simply focus on disseminating the information. Rather, they must also defend against unwarranted challenges to the validity and interpretation of their findings while proactively ensuring unsubstantiated counter-narratives do not drown out the correct message.¹⁵ Furthermore, as observed on multiple occasions throughout the COVID pandemic, these threats can come from within the medical community. Physicians can actually be the source of misinformation, leading to confusion and further disruption of trust with scientific processes and health care providers.

THE ROLE OF SCIENTISTS AND INSTITUTIONS TO CHAMPION A CULTURE OF CRITIQUE

How can scientists and institutions that generate and communicate scientific information anticipate and respond to these threats? The ability to credit peer-reviewed information published in scientific journals and to discredit information without such sources is the strongest countermeasure to misinformation.²⁰ Peer-reviewed journal articles are designed to separate fact from fiction, with explicit information about sources and any conflict of interest. Because of this critical role in signaling the trustworthiness of science, medical journals may be the ally in greatest need of support. The arrival of open access journals has many benefits, including contributing to a trend in which traditional journals are making more of their content available for free. For example, any study completed with funding from the NIH must be made publicly accessible within 12 months of publication. However, the ability to publish journals inexpensively online has also given rise to the so-called “predatory journals” that aggressively solicit manuscripts from scientists who are eager to publish their work.²¹ In many cases, editors at predatory journals do not subject their manuscripts to traditional peer review. It can be difficult for even a scientist to determine whether a medical journal is legitimate or predatory.

The urgent threat of the pandemic catapulted the use of preprint servers into the public domain. A preprint is a complete manuscript posted to publicly accessible servers by authors prior to peer-review. The goals of posting preprints are to obtain timely feedback and comments before submission to a peer-reviewed journal, solicit collaborations, claim attribution, and expedite the dissemination of findings. Although preprints are essential in allowing scientists and public health officials to get an early look at the clinical manifestations and epidemiology of COVID-19, they have changed the landscape of scientific communication.²² Hashtags associated with an individual, highly tweeted reprint revealed emergent themes extending well beyond a scientific audience, ranging from good public health practice (#washyourhands) to conspiracy

theories (#fakenews and #endthelockdown). In the absence of appropriate peer-review, preprints also enable sharing of manuscripts that lack sufficient quality, rigor, or methodologic details necessary for critical appraisal and help spread unreliable and even fake information.^{23–25} Equally important, authors should provide a cautionary note that the article has not been peer-reviewed whenever referencing the manuscript.

Rapid publications during the pandemic, whether through expedited review, preprints, or opinion pieces serve to compromise the integrity of science.²⁶ An even greater adoption of Open Science principles may counter the misuse of preprints and peer-reviewed articles and address the “reproducibility crisis” that undermines trust.²⁷ Furthermore, an emphasis on equity in scientific review provides assurances that reviewers, editors, and editorial boards better understand the intersection of biology and systemic/structural determinants of health that are necessary to address the mistrust in communities that have been historically marginalized and underserved.

Central to the integrity of science is a culture of critique, replication, independent validation, and self-correction. In a recent perspective piece entitled “Signaling the Trustworthiness of Science,” Jamieson et al. proposed mechanisms for researchers, journals, and academic institutions to better communicate practices that embody scientific norms across dimensions of competence, integrity, and benevolence.²⁸ During the COVID-19 pandemic, research findings are often reported to the public only to be contradicted by subsequent research findings, a common occurrence in the scientific process.²⁹ The backbone of the pernicious effects of misinformation is the continued influence effect,¹⁷ which refers to the tendency for information that is initially presented as true, but later revealed to be false, to continue to affect memory and reasoning. This ecosystem heightens the importance of communicating to the public that scientists champion a culture of critique. Science does not progress in a straight line; it is not a collection of facts cascading towards incontrovertible knowledge. Scientists must place a premium on explaining how new evidence has led them to update or reject an earlier result. A narrative that recounts the process is an effective way to assure the public of the integrity of the science.³⁰ Additional signals of trustworthiness include replication and transparency. Archiving data and preregistered analysis plans in publicly available repositories make it possible to validate and build upon the results of others. Finally, the norm of self-correction calls on institutions (universities, journals, funders) to establish robust procedures to investigate and communicate results when findings are suspect, whether as a result of honest error or fraud. Taken together, the research community should signal to the public and policymakers that the community itself can actively protect the trustworthiness of its work through each of these mechanisms.

THE ROLES OF HEALTH SYSTEMS

Historical abuses, structural racism, disparities in care, limited diversity of the healthcare workforce, and personal experiences of discrimination have culminated in deep mistrust in health systems by communities of color and other socially disadvantaged groups.³¹ Consequences of institutional untrustworthiness with the COVID-19 response include lack of perceived susceptibility to COVID-19³² and skepticism towards research and public health interventions.³³ This is evident in the low rates of participation in COVID-19 vaccine trials in subgroups including Black communities.³⁴ This disparity threatens both the validity and generalizability of trial results. Best et al. proposed a paradigm shift from increasing trust among Black communities to increasing trustworthiness among medical institutions and public health systems.³⁵ This will require critical reflection, courageous dialogue, truthful documentation, reparation, and reconciliation.

Health systems should prioritize competency and transparency and increase awareness of structural barriers and systemic racism in the general population. Community-centered public health practice is foundational to this work. Community engagement demonstrates respect and sensitivity while capturing relevant social, cultural, and environmental contexts. It is particularly important to engage those affected in the development and communication of public health messages and to elevate trusted sources—such as physicians of color and religious and community organizations. Another approach is to leverage intergenerational communication by targeting information for those who care for older Black adults. We applaud Black leaders and physicians who have led the dissemination of validated information through social media, traditional media, and other channels.^{35,36} However, the responsibility of addressing centuries of racism should not fall on the Black community alone.

Health systems should adopt evidence-based strategies to build the trusting relationships needed to address health disparities.³¹ Such strategies include: (1) seek, develop, and maintain trust-based relationships with community organizations (e.g., educational, religious, community centers) and empower them to work as coequals in the design of interventions and dissemination of results. The NIH Clinical and Translational Science Awards Hubs responded to the COVID-19 pandemic by working collaboratively with a variety of community partners on a wide range of initiatives to accelerate the discovery and delivery of COVID-19 treatments and vaccines. These efforts have made the Hubs trusted community partners and provide a road map and tool kit for health systems;³⁷ (2) establish institutional commitments with appropriate operational strategies, resources, and accountability systems; (3) establish, track, and share progress on metrics; and (4) ensure that all communications with the public by the health system's providers, administrators, faculty, and learners are based in science and conducted in alignment with respectful practices for community engagement. This is particularly important as personal philosophy and opinion pieces may confuse the public, especially when they contradict science and evidence-based medicine and practices. Ultimately, transitions to systems that reward good health outcomes will require health systems to proactively partner with patient populations and communities to eliminate health disparities.

OPPORTUNITIES FOR ADVOCACY

The COVID-19 pandemic has demonstrated that accelerated development of novel approaches to diagnosis, prevention, and treatment is possible when public-private partnerships are emphasized and governments heavily invest in high-quality science. These amazing successes have unfortunately been countered with willful misinformation and compromised by mistrust in our health care system. To ensure that the benefits of these advances are equitably distributed and realized, it is essential that we rigorously maintain integrity in the discovery process and that physicians and public health officials skillfully communicate findings in a manner that recognizes the information needs of a diverse public. The Federation of State Medical Boards' Board of Directors, supported by the certifying boards of pediatrics, internal medicine, and family medicine recently issued a statement indicating that physicians who spread misinformation on COVID-19 are risking disciplinary action, including the suspension or revocation of their medical license.³⁸ We must remain steadfastly accountable to the public and speak out when our colleagues breach the hard-earned trust we have earned. Finally, with an inadequate supply of both physician-scientists and public health officials, we must continue to advocate for investments in workforce development to support the evolving and diverse needs of children and their families.

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AUTHOR CONTRIBUTIONS

Dr. Mary Leonard developed the idea for the manuscript and engaged the other authors in participating in the writing process. The remaining authors provided critical input into editing and re-writing the manuscript.

COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

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