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COMMENTARY/POSITION PAPER

National Institutes of Health social and behavioral research in response to the SARS-CoV2 Pandemic

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Abstract

The COVID-19 pandemic has been mitigated primarily using social and behavioral intervention strategies, and these strategies have social and economic impacts, as well as potential downstream health impacts that require further study. Digital and community-based interventions are being increasingly relied upon to address these health impacts and bridge the gap in health care access despite insufficient research of these interventions as a replacement for, not an adjunct to, in-person clinical care. As SARS-CoV-2 testing expands, research on encouraging uptake and appropriate interpretation of these test results is needed. All of these issues are disproportionately impacting underserved, vulnerable, and health disparities populations. This commentary describes the various initiatives of the National Institutes of Health to address these social, behavioral, economic, and health disparities impacts of the pandemic, the findings from which can improve our response to the current pandemic and prepare us better for future infectious disease outbreaks.

Keywords

COVID-19, SARS-CoV-2, Coronavirus, Transmission mitigation, Health disparities

Implications

Practice: Digital and community-based interventions are being relied upon increasingly to bridge the health care access gap resulting from the COVID-19 pandemic, some with inadequate support as a replacement for, not as an adjunct to, in-person clinical care.

Policy: Mitigation strategies have benefits and costs, including potential downstream health effects, particularly for underserved and vulnerable populations, that need to be evaluated as these strategies are being implemented.

Research: The National Institutes of Health has developed a range of behavioral and social science research initiatives to address the evaluation of COVID-19 mitigation strategies, their economic, social, and health impacts, interventions to bridge health care access disruptions, and the uptake and interpretation of virus testing, particularly in vulnerable and underserved communities.

BEHAVIORAL AND SOCIAL SCIENCE RESEARCH QUESTIONS TO ADDRESS THE COVID-19 PANDEMIC

To combat the COVID-19 pandemic, population-level social and behavioral strategies to communicate risk and encourage behaviors to mitigate transmission risk have been rapidly implemented. Given the urgent public health need to reduce the transmission rate as quickly as possible, rigorous safety and efficacy research (including cost–benefit studies) of these various social and behavioral mitigation strategies could not be conducted prior to widespread implementation. Research on the use of these strategies during prior influenza [1,2] and coronavirus [3] epidemics provides some empirical guidance for implementation, but the transmission profile of the SARS-CoV2 virus and the extensive implementation of these mitigation strategies limits the generalizability of prior findings to the current pandemic. As a result, we are living through a global social and behavioral intervention experiment to mitigate the transmission of SARS-CoV2. There is an urgent research need to improve our understanding of how well these strategies mitigate transmission risk, how different communities are impacted by these mitigation strategies, and the potential secondary effects of these mitigation strategies on health and welfare.

The pandemic has exacerbated existing health disparities, not only with regard to immediate infection risk but also long-term health inequities that increase the risks of COVID-19 complications and death [4]. African Americans, Latinos, and other racial/ethnic minorities are disproportionately more likely to work in essential public-facing jobs that cannot be performed remotely and live in more densely populated urban areas, increasing the risk of exposure to the virus [5]. Many service workers who have lost their jobs as the businesses that employ them have closed or scaled back operations, as well as their families and communities, are weathering serious financial strain. Job loss also is associated with the loss of health insurance and

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reduced health care access [6]. As a result, the downstream health effects of these economic factors are likely to confer a disproportionate impact on those already experiencing health disparities.

The extensive economic and social disruptions from these mitigation strategies [7] highlight the need to evaluate both the benefits and costs of these approaches and their potential differential impact on communities. While some research has identified a relationship of economic downturns and unemployment on health, including substance abuse [8], mental health conditions [9], and suicide [10], the relationship of economic downturns to overall health and mortality is complex. Some studies have shown that economic downturns are associated with improved health and reduced mortality depending on how confounds are controlled [11]. Public health response to the COVID-19 pandemic and to future illness outbreaks can be improved with more precise parameters for modeling the impacts of social and behavioral changes, including the economic impact on mortality and morbidity related to the acute public health crisis [12,13].

During the pandemic, health care resources have been diverted to address COVID-19, "elective" services have been postponed, and most patients and providers are not participating in face-to-face care. Concomitantly, there may be a surge in the need for these services as some conditions, such as substance abuse, mental illness, and chronic conditions, may be exacerbated by the stress of the pandemic, inadequate access to medications, the public health mitigation strategies, and/or their economic repercussions. Where possible, digital health and telehealth technologies have been used increasingly to provide services remotely [14,15]. Although there is considerable research on these digital interventions, many were intended as adjuncts to in-person treatments, not as a replacement for in-person care. Increasing reliance on telehealth and other digital interventions also may exacerbate already existing health inequities given inequities in computer and broadband access [16]. Community-based interventions have been employed to provide needed health care access, particularly in vulnerable or underserved communities [17], but the ability of these digital and community-based interventions to bridge the gap in adequate health care access, especially for underserved and vulnerable populations, requires further study.

The long-term impact on those who recover from COVID-19 is not yet known. Psychosocial complications from intensive care units have been observed [18], and it is reasonable to hypothesize that the limitations on social contact and family support while hospitalized may exacerbate these complications. Furthermore, some who recover may experience survivor guilt or stigma associated with having COVID-19, which may negatively impact psychosocial recovery.

Another pressing area of needed research is SARS-CoV2 testing uptake and response. The Health Belief Model was born from the experiences with tuberculosis (TB) screening in the 1950s in which, despite the convenience of mobile TB screening in communities, many did not get screened due to perceptions of the severity and susceptibility of being infected and of the benefits and barriers of testing [19]. More recently, HIV testing uptake has been shown to be influenced by intrapersonal, interpersonal, and sociocultural factors [20]. As the capacity of virus and antibody testing for SARS-CoV2 expands to test broadly throughout the population, not just among those with symptoms, the field will need to apply what we know about what motivates individuals to get tested and to interpret and respond to test findings appropriately, especially in vulnerable and underserved communities. Structural factors that hinder testing (e.g., mistrust of science and racism) in these communities also need to be anticipated and addressed. In the near future, facilitating vaccination uptake, particularly given misinformation campaigns about vaccines being rapidly evaluated for safety and efficacy [21], will be an important research effort as well.

NATIONAL INSTITUTES OF HEALTH SUPPORT FOR BEHAVIORAL AND SOCIAL SCIENCE RESEARCH TO ADDRESS THE COVID-19 PANDEMIC

National Institutes of Health (NIH) responded to urgent research needs for testing, therapeutics, and vaccines, as well as the important social and behavioral research needs described above. The following describes the key behavioral and social science-related efforts of the NIH COVID-19 research response.

Data to facilitate social, behavioral, and economic research on COVID-19

Early in the pandemic, NIH institutes, centers, and offices issued several calls for research using rapid funding mechanisms to communicate interest and priorities addressing research questions regarding mitigation effects, economic, and social impacts, downstream health effects, and the disproportionate effects in vulnerable and health disparities populations. Notices of Special Interest (NOSIs) relevant to these social, behavioral, and economic research directions are listed on the Office of Behavioral and Social Science Research Funding Opportunity page (https://obssr.od.nih.gov/research-support/funding-announcements/). The response to these supplement NOSIs has been strong, and NIH has developed an accelerated and coordinated review process to rapidly fund meritorious supplement applications.

Many of the NOSIs encourage the collection and capture of multilevel data prepandemic and postpandemic to assess mitigation strategies and their economic and health care side effects on health and welfare across the country, as well as

cross-nationally. Large nationally representative longitudinal samples, as well as smaller targeted samples capturing smaller vulnerable populations, can provide important insights about change over time of health and well-being, both short and long term, to inform current and future mitigation efforts. Encouraging the use of comparable items or protocols when appropriate can increase the utility of collected data without limiting innovation. To encourage broad use of NIH-supported data resources and research replication, NIH issued a notice (https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-118.html) highlighting harmonization and data sharing expectations to investigators requesting support to collect data for COVID-19 research.

COVID-19-specific survey item repository

COVID-19 and its mitigation require assessing unique constructs specific to the pandemic. The speed with which researchers developed and deployed COVID-19 survey items made a priori harmonization impossible, but data integration and sharing can be facilitated by survey item sharing. NIH is collecting COVID-19-specific items for population and clinical research and making them available to encourage future researchers to use these recently developed items to compare findings and facilitate data integration. Two platforms, the Disaster Research Response (DR2) and PhenX have been used to submit, post, and share survey items used in population and clinical research. DR2 serves as a platform for full survey instruments (https://dr2.nlm.nih.gov/). PhenX provides distinct COVID-19 item modules (https://www.phenxtoolkit.org/covid19) in addition to a wide array of non-COVID-19-specific measurement protocols, including recently added social determinants of health protocols. Nearly 70 COVID-19-specific surveys have been posted to date, but the degree to which these survey items have been tested and validated is not yet available. Future work will further organize, vet, and provide backend database functionality for these COVID-19-specific survey items.

Psychosocial recovery

The initial supplemental appropriations from Congress for NIH COVID-19 research (HR6074 and HR748 with combined NIH supplemental appropriations of $1.78 billion) targeted predominately vaccine and therapeutics development and evaluation. NIH also established a public–private partnership called Accelerating COVID-19 Therapeutic Interventions and Vaccines to accelerate this research in partnership with other government agencies, biopharmaceutical companies, and other entities [22]. Although these efforts are predominately biomedically focused, within the therapeutics clinical trials efforts, there has been considerable interest in the recovery process, including research on the psychosocial recovery of those who survive COVID-19 illness.

Social, behavioral, and economic impacts

To adequately cover the wide-reaching areas of research related to COVID-19, trans-NIH workgroups were formed by NIH leadership. The Social, Behavioral, and Economic Impacts of COVID-19, Particularly in Vulnerable and Health Disparities Populations Workgroup has developed funding opportunities to implement and evaluate digital and community-based interventions to extend the health care workforce, bridge health care access limitations, and engage communities to understand and reduce the adverse impacts of the pandemic on the health of underserved and vulnerable populations (NOT-MH-20–53, https://grants.nih.gov/grants/guide/notice-files/NOT-MH-20-053.html; NOT-MD-20–022, https://grants.nih.gov/grants/guide/notice-files/NOT-MD-20-022.html). Digital health care intervention research is needed to determine the role and impact of digital health interventions (e.g., mobile health, telemedicine and telehealth, health information technology, wearable devices, and personalized medicine) during and following the COVID-19 pandemic to ameliorate the secondary health impact. While digital health care interventions are a necessary approach during a disease outbreak, research is needed to ensure that they are robustly effective and can bridge the digital divide across the lifespan and economic status to reduce, not exacerbate, existing health care disparities. Similarly, community intervention research is encouraged to implement and evaluate the impacts of mitigation strategies to prevent COVID-19 transmission and acquisition in NIH-designated health disparity populations and other vulnerable groups and to evaluate already implemented or new/adapted interventions to address the adverse psychosocial, behavioral, and economic consequences of the pandemic on the health of these groups. In addition to the supplement NOSIs listed above, NIH recently released Funding Opportunity Announcements on digital (https://grants.nih.gov/grants/guide/pa-files/PAR-20–243.html) and community (https://grants.nih.gov/grants/guide/pa-files/PAR-20–237.html) intervention research to address these research questions.

Testing uptake and response

The NIH received a $1.81 billion supplemental appropriation from Congress (HR266) to accelerate research on virus and antibody testing. This large initiative, called Rapid Acceleration of Diagnostics (RADx), focuses on a number of critical testing research needs [23]. Among the RADx testing efforts

is Rapid Acceleration of Diagnostics-Underserved Populations (RADx-UP), a trans-NIH initiative to increase access and uptake of COVID-19 testing in underserved and vulnerable communities. The overall goal of RADx-UP is to reduce COVID-19-associated morbidity and mortality disparities for vulnerable and underserved populations that have been disproportionately affected by the pandemic as a result of higher infection rates and/or risk of more adverse outcomes from contracting the virus. The initiative will leverage existing research centers and networks with established community-engaged relationships and new collaborations among individual research awardees with the potential to mobilize quickly to have a positive impact on testing in underserved or vulnerable groups (NOT-OD-20−120, https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-120.html; NOT-OD-20−021, https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20-121.html). NIH funds a wide range of large-scale, community-engaged research projects in underserved and vulnerable populations that are well positioned to address these research questions. The initiative will include research focused on the social, ethical, and behavioral implications of SARS-CoV2 testing in these populations (NOT-OD-20−119, https://grants.nih.gov/grants/guide/notice-files/NOT-OD-20−119.html), as well as a Coordination and Data Collection Center as a national research resource (RFA-OD-20-013, https://grants.nih.gov/grants/guide/rfa-files/RFA-OD-20-013.html). The RADx-UP initiatives not only will generate critical research findings to improve testing uptake and follow-up but also will provide the infrastructure for future community-based research on contact tracing, therapeutics, and vaccine uptake as well.

Summary and implications

The NIH has developed a rapid and comprehensive research response to the SARS-CoV2 and COVID-19 pandemic. In addition to critical biomedical research in testing, therapeutics, and vaccines, NIH has also prioritized key social and behavioral research questions involving mitigation strategies, economic and social disruptions from those strategies, downstream health and health care impacts, interventions to ameliorate these downstream impacts, psychosocial recovery from COVID-19, and testing and vaccination uptake, especially in the populations disproportionately affected by the pandemic.

Research supported by NIH has the potential to shape how we understand and prioritize our mitigation strategies and can inform how these strategies can best be reinstituted should a second wave of infections occur. Evaluation of digital and community-based interventions deployed to address downstream health effects will improve the understanding of the effects of these interventions and their mechanisms. As testing is expanded, the research supported by RADx-UP will provide critically important information about how to encourage broad-based uptake of SARS-CoV2 testing, especially in underserved and vulnerable populations, and prepare us to encourage vaccine uptake when vaccines become available. NIH is committed to the acceleration of research to diagnose, prevent, and treat COVID-19 and the downstream health impact of this pandemic. The findings from this research are critically important, not only to the current pandemic but also to addressing the social and behavioral challenges postpandemic and preparing us to respond better to any future disease outbreaks.

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