

Equitable Pandemic Preparedness and Rapid Response: Lessons from COVID-19 for Pandemic Health Equity

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Abstract

The novel coronavirus pandemic has set in high relief the entrenched health, social, racial, political, and economic inequities within American society as the incidence of severe morbidity and mortality from the disease caused by the virus appears to be much greater in Black and other racial/ethnic minority populations, within homeless and incarcerated populations, and in lower-income communities in general. The reality is that the U.S. is ill equipped to realize health equity in prevention and control efforts for any type of health outcome, including an infectious disease pandemic. In this article, we address an important question: When new waves of the current pandemic emerge or another novel pandemic emerges, how can the U.S. be better prepared and also ensure a rapid response that reduces rather than exacerbates social and health inequities? We argue for a health equity framework to pandemic preparedness, grounded in meaningful community engagement that, while recognizing the fundamental causes of social and health inequity, has a clear focus on upstream and midstream preparedness and downstream rapid response efforts that put social and health equity at the forefront.

Keywords COVID-19, health equity, preparedness, pandemic, community engagement, inequities

As epidemiologic data regarding the novel severe acute respiratory syndrome coronavirus 2 started to emerge in the United States in March 2020, it quickly became obvious that this virus is not an equal-opportunity threat. The incidence of severe disease and mortality from COVID-19 (the disease caused by the virus) appears to be much greater in Black and other racial/ethnic minority populations, within homeless and incarcerated populations, and in lower-income communities in general (Artiga et al. 2020; Mosites et al. 2020). COVID-19-related health

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inequities—from testing access to mortality—have captured the attention of the mainstream media, clinicians, researchers, and health advocates alike.

Much discussion around COVID-19 inequities has focused on individual-level characteristics and behaviors. Many reports explain the disproportionate burden of severe COVID-19 morbidity and mortality among people of color by noting the higher prevalence within those communities of underlying health conditions like obesity, diabetes, and asthma (Kendi 2020). This includes Surgeon General Jerome Adams, who beseeched communities of color to follow Centers for Disease Control and Prevention (CDC) behavioral guidelines to prevent the further spread of COVID-19 within their families and communities, and to limit their smoking, drinking, and drug use.

However, as data on COVID-19 inequities emerged, the immediate response of health equity researchers and advocates was one of horror but not surprise, with a different set of explanations and advice. First, at the individual level, people in different socioeconomic circumstances do not have the same ability to follow the chorus of CDC advice: wash your hands, stay home, and self-isolate if you have symptoms. Isolation is impossible in households with multiple families or in settings like jails and prisons. Hand washing is impossible when your water has been shut off. Further, some of CDC's advice and state/local emergency orders, while seemingly innocuous, were developed and communicated without consideration of the implications for communities of color. For example, recommendations and mandates to wear a face mask in public are problematic for many Black men who perceive covering their faces more of a threat to their health than the coronavirus itself.

Second, the novel coronavirus has set in high relief the entrenched health, social, racial, political, and economic inequities within American society. As a result of decades of public

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policies that have further concentrated wealth and other resources in a smaller, privileged corner of society, communities of color and other marginalized populations—those living in or near poverty, the homeless, people within the carceral system, immigrants, etc.—find themselves with limited to no economic cushion or social advantage while they grapple with physical and mental health comorbidities caused, in part, by the same unjust policies that increase their communities' vulnerability to COVID-19. In addition, the social and economic downsides of stay-at-home orders and other necessary public health interventions also hit lower-income and minority communities harder. Several health advocates, journalists, and researchers have provided insight into how the novel coronavirus has exploited decades of structural inequity—no health insurance, no paid sick leave, no affordable housing, deep underinvestment in inner cities, lack of access to banking, reliance on public schools for food security, etc.—to disproportionately strike historically marginalized and under-resourced populations (O'Donnell 2020; Tobin-Tyler 2020; Villarosa 2020).

Importantly, the inequities emerging in the COVID-19 pandemic are not *due* to race or social class. Rather, they are the result of structural racism and social inequalities embedded within the economic, political, education, health care, criminal justice and other systems and social structures in the U.S. Understanding the fundamental causes of COVID-19 health inequities requires appreciating that the more proximate causes—higher rates of serious medical conditions, living in crowded housing, inability to work from home, etc.—are themselves the result of social inequalities produced by social systems reinforced through public policy (Phelan, Link and Tehranifar 2010). As Braithwaite and Warren (2020) wrote: “Any virulent virus without a vaccine is bound to become a human petri dish in which people of color in the U.S. today are

caught...The war against the coronavirus for people of color is part and parcel of the war to eliminate historic inequities and to level the socioeconomic playing field.”

The sad reality is that the U.S. is ill equipped to realize health equity in prevention and control efforts for any type of health outcome, including an infectious disease pandemic. Solutions to the fundamental causes of health inequities will require deep, structural changes to American policy, politics, mindset, and culture. While we endorse the vision of long-term upstream policy and system change goals, we are skeptical that such dramatic transformations are realistic in the short or mid-term. Thus, as the health equity community advocates for long-term, structural changes, in the face of a novel infectious disease pandemic we must also prepare for the interim and respond to the immediate.

In this article, we address an important question: When new waves of the current pandemic emerge or another novel pandemic emerges, how can the U.S. be better prepared and ensure a rapid response that reduces rather than exacerbates social and health inequities? We argue for a health equity framework to pandemic preparedness that, while recognizing the fundamental causes of social and health inequity, has a clear focus on upstream and midstream preparedness and downstream rapid response efforts that put social and health equity at the forefront.

A Model for Health Equity Infectious Disease Preparedness

Quinn and Kumar (2014) describe the distal and proximate causes of infectious disease-related inequities and put forward a framework to intervene on both sets of risk factors. Building upon Blumenshine et al.’s (2008) work on possible sources of disparate and unequal outcomes in an influenza pandemic, this framework considers disparities based on social position (race/ethnicity

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and socioeconomic status) at three levels: (1) in exposure to the virus; (2) in disease susceptibility, if exposed; and (3) in timely and effective treatment, once disease has developed. Key contributors to disparities include occupational factors, crowding in households, nutritional status, stress, access to health care, primary language, and availability of antivirals.

Based on their prior work in India and the U.S., Quinn et al. (2011) and Kumar and Quinn (2012) conceptualized the plausible causes of unequal burdens of illness and death during a pandemic. Their 2014 conceptual model makes explicit that there are both proximal (i.e., downstream, behavioral, and biological) and distal (i.e., upstream, social, and policy) risk factors that contribute to inequities in a pandemic. Key distal factors are population structure, access to clean water, ability to stay away from work, and availability of quality health care. Proximal risks for disparities are related to behaviors such as hand washing and social distancing, immediate access to health care, and underlying susceptibility to disease due to nutritional status and chronic stress, which causes physiological dysregulations, inflammation, and impaired immune response (Juster, McEwen, and Lupien 2010).

In the sections below, we apply Quinn and Kumar's model to the current COVID-19 pandemic by (1) connecting their framework's "distal" and "proximate" causes of disparities to current taxonomies regarding upstream and midstream social determinants of health and more proximate downstream individual social risks; (2) recommending two specific paths of action, one focused on social determinant-related health equity preparedness and the other on a set of downstream, health equity-promoting rapid response efforts; and (3) underscoring and strengthening the framework's commitment to data collection and community engagement as non-negotiable components of a health equity preparedness paradigm for infectious disease.

Upstream and Midstream Social Determinants and Downstream Social Needs

There is now widespread recognition that health—at the individual, community, and population levels—is the result of much more than health care quality and access (Solar and Irwin 2010; Woolf and Braveman 2011). The main drivers of health are socioeconomic, environmental, and behavioral factors that play out at multiple levels within society. The socioecological model of population health and human development includes five levels at which social processes/factors produce both health and health inequities (Richard, Gauvin, and Raine 2011). This includes intrapersonal, interpersonal, institutional, community, and system or macro-level factors. All levels are embedded within and influenced by higher levels in the model and create specific types of health distributions and inequities. In addition, all levels in the model provide opportunities for intervention, although it is the more upstream system or macro-level factors that shape the midstream community and institutional factors, which in turn create unequal health outcomes at the downstream, individual level.

The “distal” and “proximate” causes of pandemic inequalities can be further extended using the socioecological and other models of the social determinants of health to distinguish the system/macro-level or upstream determinants from the midstream (community and institutional) determinants, and to distinguish both from the more downstream individual-level manifestations of exposures, risks, and social needs (Castrucci and Auerbach 2019). Distinguishing between upstream/midstream determinants of health and the downstream manifestations of those drivers within individuals is important for both understanding the causes of health inequity and identifying key focal points for intervention.

For example, there is a difference between identifying and assisting individuals who are unable to afford rent during pandemic stay-at-home orders versus creating higher levels of

housing affordability and paid sick leave within communities and jurisdictions. This distinction is crucial since interventions that address downstream social needs that benefit individuals often do not impact community-level social determinants that are driven by policy choices and are therefore not amenable to person-level action. In addition, focusing on the individual-level needs and outcomes tends to prioritize health care/biomedical responses, conflating *health* with *health care* and conflating social determinants of health with individual social needs (Alderwick and Gottlieb 2019; Lantz 2019).

Quinn and Kumar's (2014) "distal" and "proximate" causes of infectious disease disparities map cleanly onto models of the social determinants of health at the midstream and downstream levels. Institutional policies dictate whether certain classes of workers have the flexibility to isolate at home. Health care provider shortage areas are driven, in part, by government decisions that then unfairly predispose certain communities to inequitable access to care and treatment during an infectious disease pandemic. To prepare for how upstream social factors create health inequities means reforming those systems, policies, and structures to more equitably distribute resources and reduce immediate burdens within and across communities.

That immediate burden (Quinn and Kumar's "proximate causes") is characterized by what individuals within those communities need to survive an epidemic: a home in which to shelter, running water, affordable and trusted health care when needed. The rapid responses necessary to help individuals in crisis—temporary housing, flexible deployment of health care resources—are distinct from longer-term policy changes necessary to prepare for and undo the social determinants. Thus, we make two sets of recommendations below: actions to support pandemic health equity preparedness at the distal/social determinant level, and actions to develop a pandemic health equity rapid response at the proximate level. Our recommendations below

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springboard from prior research and recommendations regarding the critical need for a strong health equity perspective in disaster and pandemic planning efforts (Davis et al. 2010; Lichtveld 2018; Mays 2016) and from what has been observed in the current COVID-19 crisis to date.

Upstream/Midstream Preparedness and Downstream Rapid Response

We recommend that new or revised pandemic preparedness plans at the federal, regional, state, and local levels be grounded in community engagement, built from community assets, and be evidence- and data-driven (discussed in more detail below). We also recommend that these plans identify the key ways in which policy, community, and institutional-level factors could create differences in the ability of people of different socioeconomic positions or sociodemographic groups to prevent exposure or avoid severe morbidity or mortality from an infectious agent.

Infectious disease preparedness needs, at a minimum, to address *upstream and midstream policy and institutional factors* in certain key areas, as outlined in Table 1:

[Table 1 here]

We also recommend that a health equity lens be applied to preparations for *downstream rapid response*. Pandemics place a substantial burden on the resources and capacities of governments, public health, and health care systems, often exposing underlying weaknesses. As these interconnected systems shift to crisis mode, implementing pandemic preparedness plans may leave behind individuals and communities already socially vulnerable (Kayman and Ablorh-Odjidja 2006). During an emergency, health equity must be a priority and intentional strategies are required to embed distributive justice into the immediate response. Given the differing sociocultural and economic needs of diverse populations, the specific strategies will vary in

important ways only identifiable through the meaningful community engagement described below.

During an infectious disease pandemic, public health, government, and health care systems must rapidly respond to prevent and address inequities in the areas outlined in Table 2 (Bedford et al. 2019; Vaughan and Tinker 2009; Zarocostas 2020):

[Table 2 here]

Data Collection and Community Engagement: Quinn and Kumar (2014: 268) also note the importance of investing in surveillance systems that can both detect novel agents and outbreaks early and capture sociodemographic and GIS information on incident cases to draw “attention to the larger, social, economic and physical environments in which those cases occur.”

The United States’ ongoing difficulty with collecting and reporting race and ethnicity data during the current coronavirus pandemic demonstrates how far we are from the health equity–promoting surveillance capabilities Quinn and Kumar describe. Indeed, after government and nonprofit entities demanded through letters and op-eds that the CDC release the data stratified by race and ethnicity, 78% of the information on incident cases that CDC published was missing race and ethnicity information (CDC 2020).

Race and ethnicity represent only the tip of the iceberg in terms of what information is needed to orient infectious disease preparedness and rapid response activities toward health equity. Indeed, neither race nor ethnicity are modifiable risk factors. Rather, they are poor proxies for the social risks and social determinants to which communities of color and the residents who live within them are exposed. Beyond sociodemographic data, we need standardized, valid, inclusive data collection on the social needs and social determinants most likely to correlate with increased exposure, susceptibility, and severity of infectious diseases.

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Fortunately, those data points are known. The CDC released a Social Vulnerability Index (SVI) in 2011 and noted a “number of factors including poverty, lack of access to transportation, and crowded housing may weaken a community’s ability to prevent human suffering and financial loss in a disaster.” (CDC 2011). Unfortunately, the SVI was not incorporated into COVID-19 responses.

To successfully promote health equity, surveillance system data must:

1. Include standardized, core measures that all relevant sectors (health care, public health, social services, etc.) agree to use.
2. Allow for data sharing across those sectors while protecting individuals’ information.
3. Relate to and complement other crucial data collections (such as using formal ICD-10 Z codes to identify social needs in clinical settings, or vital statistics reporting for public health departments).
4. Capture macro-level data on the social determinants of health geocoded to home addresses when possible, at units of geography that correspond to meaningful, locally defined neighborhoods (i.e., census block, not 5-digit zip code).
5. Capture self-reported social needs/vulnerabilities and sociodemographic data including race and ethnicity in ways that allow for the valid, non-stigmatizing collection of potentially sensitive personal information.

To achieve that final requirement, and indeed to make the health equity preparedness and rapid response actions discussed above successful, patient and community engagement is crucial. Broadly defined, community engagement is the application of institutional resources (e.g., knowledge and expertise of faculty and students, technical infrastructure, and physical space) to address and solve challenges facing communities through collaboration with those communities

(Gelmon et al. 2005). Community engagement requires bidirectional relationships and interactions that are built on trust, mutual respect, cultural humility, and mutual benefit (Wilkins and Alberti 2019).

To develop appropriate sociodemographic and social-needs screening tools as well as the clinical, public health, and social service workflows that will yield the most complete and valid data, patients and community members must be engaged as equal partners in the work. Community members must be seen as contributors whose wisdom and experience navigating their communities can ensure the relevance and effectiveness of interventions to address the social factors identified through the data collection. Further, this bidirectional engagement will build trust between local communities and academic, health care, and government institutions without which public health guidance is less likely to be followed and data collection less likely to be comprehensive and produce actionable information.

Conclusion

The novel coronavirus did not create the conditions for health and social inequity, nor did it reveal heretofore unrecognized health or social injustices. Rather, the virus and its related illness took advantage of longstanding health, social, political, and economic inequities in the U.S. to once again ensure the most marginalized and under-resourced communities suffer the most. While one could argue that the U.S. response to the pandemic was inadequate across the board in terms of its timeliness and the seriousness with which initial warnings were translated into action, the lack of an intentional equity-focused approach to both preparedness and rapid response was especially egregious given that the results of that omission were so predictable.

We propose twin agendas for action grounded in evidence and community expertise. The first seeks to adjust our policies to specifically and intentionally ensure a more equitable distribution of health-promoting resources in preparedness efforts to improve population health in general and to mitigate the impact of social determinants of health during a pandemic crisis. The second seeks to adjust our rapid response actions to ensure that when in crisis, we make evidence-informed, community-engaged decisions about how to deploy those resources in ways that ensure the health and well-being of all, not just a privileged few. When the next pandemic hits, or when the next wave of this novel coronavirus crests, we hope this and other calls for action significantly increase our nation's ability to promote social justice and health equity in both our responses and their outcomes.



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Table 1 Essential Multi-Sector Actions for Pandemic Health Equity Preparedness**Build Strong Public Health Infrastructure That Includes:**

- Stockpiles of essential materials to prevent exposure (e.g., high-quality masks, hand sanitizer, personal protective equipment, etc.).
- Stockpiles of essential materials for testing, diagnosis, antibody testing.
- Plans for the equitable distribution of stockpiled materials.
- Access to rapid disease testing, antibody testing, diagnosis and follow up.
- Rapid contact tracing.
- Increases in funding to local, state, regional, tribal and Federal public health agencies.

Ensure the Material Conditions of Health for All (as defined by the World Health Organization):

- Strong food access and security systems.
- High levels of housing security and affordability.
- Low levels of housing crowding.
- High levels of air and water quality.
- Prohibitions on evictions and significant rent hikes during epidemics/pandemics.
- Prohibitions on water and other utility shut-offs during epidemics/pandemics.
- Financial access to health care (health insurance coverage).
- Strong health care safety net system, including community health centers and public health clinics.
- Sufficient health care providers (doctors, nurses, psychologists, community health workers, etc.) to meet all communities' needs.

Ensure Basic Economic Security for Individuals and Families:

- Living wage policy to reduce poverty and economic hardship in communities.
- Paid sick leave.
- Rapid and easy access to unemployment benefits and other public assistance.
- Consider Universal Basic Income (UBI) proposals.

Provide/Subsidize Access to Important Technology for Information, Home Schooling, Public Services, Personal Finances, Public Health Surveillance and Voting:

- Widespread access to free or low-cost internet for individuals and families.
- Technology support for home-schooling and home-based work.
- Financial technology: Widespread access to online banking, automobile registration and licensure, rent or mortgage payments, etc.
- Design and implementation of efficient and user-friendly systems for applying for and receiving public assistance, financial assistance and social services.
- Smart-phone technology for infectious disease exposure and contact tracing.
- Clear policies that make voting by absentee ballot and by mail easy and secure.

Implement and Enforce Infectious Disease Prevention and Control in Congregate Settings:

- Better enforcement of current regulations in nursing homes, psychiatric hospitals, rehabilitation centers, jails and prisons, shelter, transitional housing, etc.
- Plans for prevention/control of infectious disease in community epidemics/pandemics.

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- Reduce number of people incarcerated.

Safety Standards/Plans for Public Transportation:

- Protection of drivers and other essential workers.
- Plans for physical distancing boarding, disembarking and traveling.

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Table 2 Pandemic Health Equity Rapid Response Tactics

Effectively Communicate Health Risk:

- Engage trusted community organizations and leaders to develop and disseminate messaging.
- Develop messaging that is relevant to socially vulnerable communities and recognizes the varying socioeconomic needs and differing levels of trust of health systems and government.
- Create materials at the appropriate reading level for broad audiences.
- Make information available in multiple languages using processes beyond translation that include a cultural understanding of specific communities with limited English proficiency.
- Use channels viewed as trusted and credible by socially vulnerable communities.

Implement Socio-culturally Appropriate Surveillance and Risk Reduction Strategies:

- Create community-based surveillance programs that leverage community assets.
- Use community health workers and public health educators to collect surveillance data and share risk reduction information.
- Distribute information and supplies for risk reduction such as masks and hand sanitizer via community and faith-based organizations.

Have Emergency Policies/Executive Orders Ready to Be Rapidly Implemented:

- Determine before a crisis what constitutes “essential” versus “non-essential” services.
- Require employers of front-line service providers (e.g., grocery and other retail stores, pharmacies, food plants, delivery services, etc.) to provide workers with PPE and paid sick leave.

Ensure Timely and Easily Accessible Testing:

- Use community-level data such as social vulnerability indices, availability of transportation, and population density to determine location and hours of operation for testing sites.
- Locate testing within the most socially vulnerable communities, ideally co-located with trusted community organizations.
- Provide testing at no cost, regardless of insurance status.
- Offer free transportation to testing sites.
- Monitor testing access data disaggregated by race, ethnicity and language, and rapidly shift or expand testing based on identified inequities.
- Provide resources and post-testing information in multiple languages.

Provide Equitable and Rapid Access to Quality Health Care:

- Broadly disseminate maps and location details of health care providers and clinics.
- Deploy mobile testing and treatment units in communities with limited transportation access.
- Engage trusted community organizations in messaging and ensure information is available in multiple languages.
- Extend hours of access and provide free transportation.
- Suspend any requirements for insurance or documentation of residence.
- Prioritize support for health care providers in socially vulnerable communities.
 - Local, state and national funds should give priority to safety net providers and recognize differential needs given availability of resources at baseline.

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- Government, public health and health systems with greater resources should share tools, protocols and knowledge to enable community-level response.
- Compare hospitalizations, use of specific treatments, and deaths by race, ethnicity, language, as well as social risk factors and determinants and create plans to address any differences identified.
- Ensure treatment and discharge information is available at the appropriate reading level and in multiple languages.
- Provide follow up care at no cost.

Provide Equitable and Rapid Access to Social and Economic Relief Programs:

- Prioritize distribution of economic relief to communities identified as having the most urgent need based on surveillance data.
- Provide financial support to community- and faith-based organizations and other social service agencies to ensure service continuity and capacity.