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THE WAY FORWARD STARTS NOW

Lessons From COVID-19

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The Way Forward Starts Now: Lessons From COVID-19

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The AAMC (Association of American Medical Colleges) is a nonprofit association dedicated to transforming health through medical education, health care, medical research, and community collaborations. Its members are all 155 accredited U.S. and 17 accredited Canadian medical schools; approximately 400 teaching hospitals and health systems, including Department of Veterans Affairs medical centers; and more than 70 academic societies. Through these institutions and organizations, the AAMC leads and serves America's medical schools and teaching hospitals and the millions of individuals employed across academic medicine, including more than 186,000 full-time faculty members, 94,000 medical students, 145,000 resident physicians, and 60,000 graduate students and postdoctoral researchers in the biomedical sciences. Additional information about the AAMC is available at aamc.org.

The AAMC founded the Research and Action Institute in 2020 out of the belief that new approaches are needed to identifying and solving our country's most pressing health care challenges and improving the health of all. We seek straightforward, nonpartisan solutions to these complex and often long-standing challenges. We are committed to digging deeper into the issues, making the connections that can lead to effective changes, and helping policymakers and the public understand and improve our country's health. For more information, visit aamc.org/institute.

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Contents

Executive Summary

In July 2020, the AAMC issued *The Way Forward on COVID-19: A Road Map to Reset the Nation's Approach to the Pandemic*, a comprehensive plan with 11 evidence-based actions to reset the trajectory of the country's response to the COVID-19 pandemic. Despite detailed and widely agreed upon recommendations from stakeholders, our nation has yet to act upon lessons learned to strengthen the current and future pandemic response.

The United States is, by design, decentralized in its approach to health, making coordination critical to effectively combating a public health emergency that strikes the entire nation. Yet during the COVID-19 pandemic, federal oversight and guidance was lacking in many areas. To effectively respond to COVID-19 and prepare for the next pandemic, the AAMC Research and Action Institute has identified three key themes that must be at the center of improving the nation's preparedness.

Key Themes for Future Preparedness

Coordinated Leadership: Coordination by the relevant federal agencies is necessary but not sufficient for an effective response to a global pandemic. The only successful way to coordinate multiple cabinet-level departments and agency actors is through the authority of the White House. This can be accomplished through the establishment of an individual office (as was the case during the 2014-2016 Ebola outbreak) or the creation of a coordinating team. What is most important to ensuring successful implementation and maintaining public trust is that there be one identified accountable person with the ability to transparently override individual agency decisions. Leaders (and the public) must understand who is responsible for what, and those individuals should be expected to act transparently and collaboratively with each other.

Supply Chain Redundancy: The Strategic National Stockpile (SNS) was created in 1999 to supplement state and local medical supplies and equipment during public health emergencies. At a minimum, SNS management, in partnership with states, local health care providers, and public health agencies, should be able to quickly replenish and maintain needed supplies during short-lived crises on a sporadic basis. Many public and private stakeholders have appropriately called for further studies to determine exactly how long and for how many people the stockpile should be available. To be effective, the nation must define which supplies are critical to testing, care, and research and have data systems to track these supplies in real time. In advance of the next pandemic, the nation should consider where the same materials (or personnel) may be used for disparate purposes (e.g., in both clinical and research settings).

Sustained Investments and Partnerships in Public Health and Human Resources in Health Care: Policymakers must provide secure, predicable, consistent funding of public health agencies moving forward. Where possible, funding should promote community partnerships to improve health security and enable collaboration with clinical, academic, and other organizations. Expanded support for training and diversifying the health workforce will improve access to culturally appropriate care and reduce the inevitable burnout of clinicians asked to do more and more in an extended crisis. To ensure efficiency and quality of care, we must also adapt our health care systems to effectively coordinate care that seamlessly blends appropriate use of telehealth with traditional in-person care equitably for all patients.

Introduction

In July 2020, the AAMC issued *The Way Forward on COVID-19: A Road Map to Reset the Nation's Approach to the Pandemic*, a comprehensive plan with 11 evidence-based actions to reset the trajectory of the country's response to the COVID-19 pandemic. Despite detailed and widely agreed upon recommendations from stakeholders, the nation has yet to act upon lessons learned to strengthen the current and future pandemic response.

Early and clear federal leadership is critical to equitably and effectively serve all populations. Federal engagement and collaboration are essential given the interconnected nature of communities, states, and nations in a global pandemic. In the next three to five years, policymakers must invest in the infrastructure and coordination needed to prepare for future public health crises. It is not a matter of *if* there will be another pandemic. The question is: When and how well prepared will the nation be to protect communities against the next national public health emergency — and how successfully will the nation navigate the remainder of the current crisis?

Throughout the current pandemic, clinicians, scientists, and other front-line workers in health care and public health were hailed as heroes despite being understaffed and, in some settings, underresourced for decades. Historically, U.S. medical schools, teaching hospitals, and their expert staff ("academic medicine") work in partnership with communities and public health officials and serve as international experts, leading the scientific and clinical response. Local health systems, particularly major teaching hospitals with their added capacity, technology, and expertise, have invested in maintaining a heightened level of preparedness to rapidly respond to any event at any time and respond to specific threats to their communities. This unique proficiency helped to lead local and national responses to past emergencies and disasters, including mass casualty events and public health threats such as Ebola and the 2009 H1N1 pandemic.

There are many experts — public and private — who will produce detailed analyses and recommendations to improve the nation's response to the next pandemic (or other national emergency). Ongoing, continuous, coordinated monitoring and planning at the federal, state, and local levels will be critical to reducing morbidity and mortality in future emergencies. The AAMC Research and Action Institute compiled this report to provide early, clear direction for policymakers to begin that preparation now while we respond to the current pandemic — and to work toward achieving major changes in the country's approach in the next three to five years.

Recommendations to Prepare the Nation for the Next Pandemic

1. The White House must lead the national pandemic response and ensure coordination among departments and agencies.

Overall, the nation's preparedness systems are designed to let local governments and leaders on the ground prepare for and respond to natural and human-made disasters in their areas with targeted support from the federal government. While flexibility is valuable when responding to local emergencies, too much variation can be highly problematic when facing a national crisis. A national response should coordinate policies, procedures, infrastructure, core materials, and supply chains at the federal level and not rely upon a piecemeal approach that varies by locality and region.

During the early months of the COVID-19 pandemic, the lack of coordination, collaboration, and transparency across public (federal, state, and local) and private entities diminished the effectiveness of the nation's response. The federal government must take the lead on organizing and coordinating emergency response when disease and casualties rapidly cross state lines and international borders. The federal government has the unique authority to convene and coordinate across state lines and leverage its purchasing power and ability to influence a rapid scaling-up of diagnostics and vaccine development, the production of critical supplies, and coordination of vital resources. Yet the many agencies and authorities within the Department of Health and Human Services (HHS), Department of Homeland Security, Department of Defense, National Security Council, and others do not coordinate daily. The only successful way to orchestrate many cabinet-level departments and agencies is through the authority of the White House.[1] This can be accomplished by establishing an individual office (as was the case during the Ebola pandemic) or creating a coordinating team with a clear chain of command during an extended national emergency.

Without clear federal leadership, key policies were either absent or conflicting across states, counties, and municipalities. Without federal direction and coordination, states were forced to compete against each other (and, sometimes, against the federal government) for supplies.[2] While the executive branch, lawmakers, congressionally mandated bodies, and private organizations continue to study lessons learned[3] and craft the best structure for coordinating a pandemic response, it is critical that both federal and state governments have delineated roles that are developed and shared with key stakeholders in advance. These roles, responsibilities, and expectations must be clear and transparent throughout a public health emergency. A culture of collaboration must be expected across all government agencies.

2. The federal government must engage industry and research universities at the outset of the next public health emergency and commit to purchasing diagnostics, therapeutics, and vaccines in advance.

With support from Congress, Operation Warp Speed (OWS), a 2020 initiative led at the federal level by the Trump administration, immediately made $13 billion in funding available for new vaccine research, development, and procurement. Vaccine purchase agreements provided pharmaceutical companies with the necessary support and incentive to develop their vaccines as quickly as possible.[A] This leadership and investment allowed the nation to shorten a typical 73-month-long vaccine development, manufacturing, and distribution process to just 14 months while ensuring safety and efficacy.[4]

These anticipatory investments — "buying" vaccines yet to be fully produced and tested — quickly built upon 20 years of prior research using mRNA technology developed at universities, including the University of Wisconsin-Madison and the University of Pennsylvania.[5] The arrival of the COVID-19 pandemic in early 2020 pushed this research into the spotlight, allowing scientists to build upon Zika, influenza, rabies, and HIV clinical trials already underway.

All three COVID-19 vaccines authorized for emergency or full use by the U.S. Food and Drug Administration (FDA) remain highly effective in protecting against circulating COVID-19 variants. Industry partnerships with academia, federal support, and collaboration across borders all contributed to the speed at which these vaccines were developed.

We recommend identifying individual leaders within the administration to ensure that other government entities and the general public know whom to look to for every aspect of the national response. These components could include vaccine, therapeutic, and diagnostic testing and deployment, as well as supply chain management for protective equipment, mechanical equipment, drug supplies, mortuary services,

laboratory services, and advanced life support. Federal leaders must communicate current and expected status to the public and the media early, often, and with complete transparency.

The United States should have taken this approach to the manufacturing of testing kits and ensuring that materials (reagents, swabs, etc.) were available for widespread laboratory testing. Eventually, investments in development through the National Institutes of Health's RadX initiative and other research programs made significant advances, yet early testing kits from the Centers for Disease Control and Prevention (CDC) were seriously flawed and of limited use,[6] while many of the nation's teaching hospitals, universities, and commercial laboratories developed in-house tests for COVID-19. These institutions brought new equipment online, tried to source the necessary raw materials and supplies, and stood up reporting procedures in extremely challenging and dynamic conditions.[7]

At no point in the peaks of the pandemic has the nation had an adequate supply of testing or a workable national strategy to use testing to contain outbreaks. While the AAMC Research and Action Institute and other experts recommended administering up to 9 million tests a day for both screening and diagnosis, the federal government failed to ensure the capability to administer anything close to that level.[8]

The CDC is unlikely to meet testing demands in future outbreaks and pandemics using existing public health lab partnerships, even under the best conditions. Industry was reluctant to mass produce testing kits for fear demand would fail to materialize; an OWS-like advance purchasing strategy and investment in private production could have reduced spread of COVID-19 and will be critical in mitigating a future outbreak or pandemic.[9] Any preparedness plan must incorporate meaningful thresholds and triggers for implementing the Defense Production Act (the primary source of presidential authorities to expedite and expand the supply of materials and services from the U.S. industrial base during national emergencies), the Stafford Act (revised and expanded authority for federal government to provide assistance to states during declared major disasters and emergencies), or other executive government authorities during times of extreme resource scarcity. Additionally, clear, written policies should specify when and how these authorities will be implemented in the next national crisis.

3. The federal government must ensure an effective supply chain for all critical goods and materials.

As specified in the January 2021 executive order addressing COVID-19, federal officials should ensure and coordinate a reliable functional supply chain for diagnostics. This will require establishing a centralized, electronic system to track stock of testing supplies, their availability across geographic regions, and current and expected capacity.

This capacity should include sequencing capabilities to ensure the nation can adequately monitor progress through the coming fall and winter for the current pandemic and test such a system's functionality for the next pandemic. Federal leadership should ensure equitable distribution of (and access to) testing and other supplies and use ethical rationales and clearer definitions of the communities addressed in each phase of distribution.

The SNS should enable the nation to support care for a minimum number of critically ill patients until the federal government can assure an adequate functional supply chain for a period of time.

The SNS was created in 1999 to supplement state and local medical supplies and equipment during public health emergencies such as COVID-19. However, supplies and devices such as masks and ventilators were not replenished after the 2009 H1N1 pandemic.[10] The COVID-19 pandemic revealed that the SNS

was far from prepared for the worst-case scenario, as hospitals and public health officials quickly ran out of critical supplies. Despite having built up the supply over the last year, the nation is just one major outbreak or incident away from another monumental shortage of very basic needs such as gloves, masks, and gowns.[11]

Locally, hospitals and other organizations keep on-hand inventory limited to reduce supply costs[12] to patients and payers, resulting in a just-in-time supply-chain model. Because this model relies heavily on the punctual delivery of predictable amounts of supplies, this can result in a shortage of critical supplies and medicines when demand surges.[13] The federal government should develop resources and policies to ensure access to supplies during a sudden or extended public health emergency.

At a minimum, the SNS should be able to supply small geographic areas during short-lived crises on a sporadic basis. Several bodies — including Congress and the National Academies — have called for further studies to determine the appropriate capacity of the stockpile (e.g., population size, duration of initial needs). While choosing a temporary goal is imperfect, it would provide a transparent target for providers and the public.[1] The Biden administration's executive order in January 2021 instructed federal agencies to determine appropriate supplies, production, and diversion criteria, though the SNS has not even met existing targets.[14]

These new reserves could be located centrally in the SNS or in combination with regional stockpiles, but the locations must permit the diversion or ramping-up of production of critical resources. These supplies may include personal protective equipment (PPE) such as gloves, gowns, and masks; oxygen and drugs needed for advanced life support such as paralytics, anxiolytics, and analgesics; drugs or chemical agents required to respond to known likely biological, chemical, or nuclear attacks (e.g., ciprofloxacin for anthrax); and the critical equipment needed to ventilate and administer parenteral therapies to many people. Acute care infrastructure (e.g., physical beds and intensive care unit capacity, negative pressure rooms, ventilators) and supplies (e.g., PPE, drugs, diagnostics, oxygen) should be defined, categorized, and quantified as either (1) readily available; (2) easily produced within a specific period; or (3) dependent upon time-consuming production or foreign sources.

Part of the national stockpile strategy should include data systems to track inventory and operational status of all relevant supplies and equipment throughout the country. Reliance on a single country or a limited number of factories to supply raw materials for necessary supplies is a vulnerability in the nation's current supply chain. We must periodically assess and ensure that materials and vendors are identified across regions of the country and throughout the world.

During peaks of the COVID-19 pandemic, almost 130,000 people were concurrently hospitalized across the country.[15] A temporary target — to ensure critical supplies for 130,000 or 1 million people (less than 1% of the U.S. population) or some other number — should be maintained until a specific but periodically revisited targeted supply of PPE, drugs, diagnostics, devices, and equipment is defined. Any targets in terms of stockpiles must be based upon clearly defined assumptions and expectations, including the current capacity of our nation and the potential needs of patients. While no single answer may be agreed upon, transparency is essential for budgeting, preparation, and helping local leaders prepare to augment national supplies (an example is the Johns Hopkins Center for Health Security).

Any national planning effort must agree on and expressly catalogue the capacity of human resources, drugs, beds, equipment, and other essential resources necessary to prepare for future public health emergencies. This should include an equity-focused bioethical framework for local application when supplies and human resources are strained or inadequate, and care may be affected for all patients. This is especially important when systems and regions are underresourced and overwhelmed and must impose crisis standards of care or other comparable frameworks.

While many clinical providers are relied upon for care, coordination, and support during local and regional emergencies such as mass casualty events, natural disasters, and other comparable crises, these scenarios are generally local, brief, and targeted. The current pandemic, however, has lasted for nearly 18 months and is unpredictably fluid and global in nature. Moving forward, health systems should include the need to respond to large-scale, national events in planning exercises and advise policymakers of lessons learned or anticipated unmet needs. It may be worthwhile to look at other nations (such as Israel) with significant emergency response capacity built into existing infrastructure.

4. Congress must appropriate robust and continuous funding for public health infrastructure (including the Assistant Secretary for Preparedness and Response [ASPR] and CDC).

Chronic underfunding of public health has taken a toll on the nation's emergency preparedness framework and contributes to health inequity in the United States. To date, the federal funding strategy for public health primarily has favored a crisis-response approach over robust, sustained investment; and fiscal challenges at the state and local levels have further compounded the pressures on health departments nationwide. Numerous public health crises may exist simultaneously; during the COVID-19 pandemic, opioid overdose deaths continued to rise. No viable funding strategy can assume that, when a new crisis emerges, prior public health threats subside. Public health capabilities have been strained at every level, forcing officials to divert funding away from tracking and responding to longstanding public health threats.

The COVID-19 pandemic quickly revealed the limits of the nation's public health infrastructure as nursing homes, prisons, and other residential facilities struggled with outbreaks. Long-term care facilities faced unique challenges caring for older, more frail populations in growing and sustained isolation. Hospitals, health systems, and academic health centers worked to address gaps in testing, contact tracing, and other public health activities and used their limited resources to ensure both inpatient and safe post-hospitalization care for vulnerable patients. Public health agencies partnered with the clinical system, to provide infection control guidance, augment staffing levels, distribute PPE, expand remote monitoring, and provide scarce COVID-19 testing to control outbreaks.[16]

Public health infrastructure needs to be reliable and resilient, both on the national and local levels. This will help mitigate the disparities among different populations and promote better quality of life and improved health among all individuals in the United States. The foundational public health infrastructure should be *elastic* and flexible enough so it can accommodate surges as necessary but operate efficiently between crises. Increasing the breadth and depth of the partnership between public health systems and academic medical centers can significantly strengthen preparedness and response plans by leveraging the unique expertise and resources of both entities.

Expand existing public health programs that support the development of regional preparedness and response plans, including sustained funding for programs at the CDC (including Public Health Emergency Preparedness) and ASPR (including the Hospital Preparedness Program and clinical networks).

These plans should consider which entities are best suited to lead the multiple aspects of preparedness and response (e.g., coordinating a public health response versus operationalizing a public health response). During the Ebola outbreak, the United States supported the creation of the National Emerging Special Pathogens Training and Education Center as well as 10 regional Ebola and other special pathogen treatment centers at major teaching hospitals. It is imperative that the nation fund and maintain these regional resources and partnerships to address special pathogens in all areas of the country.

While public-private-academic partnerships can stretch limited public resources further, they are not a substitute for a robust public infrastructure at every level of government. We recommend secure, continuous, predictable funding of public health agencies and their partnerships. This will allow the nation to leverage expertise from multiple sectors, enhance transparency, and help state and local organizations improve health security.

5. Federal and state governments must relax regulatory restrictions on clinical care during a national emergency.

At a minimum, easing of regulatory, licensing, and billing requirements should be implemented immediately in future national and local health emergencies.

During the COVID-19 pandemic, important reimbursement and other policy changes were led by the Centers for Medicare & Medicaid Services (CMS). Under the federal designation "public health emergency" (PHE), geographic location requirements for patients and providers were both relaxed, health care professionals were allowed to bill Medicare for remote/telehealth services, and 240 billing codes were made available for reimbursement remotely at the same rate as in-person visits.[17] Waivers from CMS have relaxed additional hiring, billing, and paperwork requirements, allowing hospitals and providers to focus on providing patient care. These increased flexibilities were well-received by both hospital systems and health care professionals and have been instrumental for infection control measures and overall clinical effectiveness.

CMS should continue to extend these flexibilities while cost and effectiveness are studied, as has been proposed in recent regulations. Flexibility is also needed as to where services are provided, including preserving waivers established under the "hospital without walls" and "hospital at home" options for hospitals at capacity while evaluating their impact.

Emergency declarations by many states and flexible funding from the federal government have allowed nurse practitioners and other clinicians to practice to a fuller extent of their knowledge and skill set and with more independence**.** Payers and federal policymakers, working with health services researchers, will need to evaluate the clinical payment and outcome data from scope of practice and other regulatory changes permitted during the COVID-19 pandemic and evaluate which of these changes should be permanent.

Policymakers should enact significant investment in broadband to cover the nation and develop and support monitoring technology that allows for use of remote expertise.

During the pandemic, telehealth was a key driver to enable needed care without unnecessary exposure to COVID-19. Beyond the pandemic, telehealth will be key to enabling efficient access to care, especially for populations limited by large distance from needed services, those with transportation barriers or mobility limitations, and others with barriers to receiving in-person care.

Rural residents, marginalized racial and ethnic groups, older adults, and those with lower levels of socioeconomic status are less likely to have broadband access. Federal investment in broadband technology should offer all populations uninterrupted access to remote clinical care. In addition, scaling telehealth care should be considered in advance of future pandemics to help improve access. Examples of health systems that have expertise in expanding telehealth capabilities include academic medical centers, federal facilities such as the Department of Veterans Affairs, and others serving large, widely dispersed

populations. Additionally, HHS should have the authority to expand access to telehealth for Medicare beneficiaries during future emergencies.

Health care systems will need financial support to effectively build and coordinate care that seamlessly and efficiently blends telehealth with traditional in-person care equitably for all patients. Policies should facilitate easy access for those lacking community infrastructure, personal resources to obtain broadband and device access, or comfort with technology. While telehealth use was minimal prior to the pandemic, usage increased by over 4,000% at the beginning of the pandemic;[18] at its peak, 64% of all evaluation and management visits within faculty practice plans were done via telehealth.[B]

Telehealth was heavily utilized for encounters related to psychiatric and behavioral disorders. Virtual preventive care or care for new conditions was less common as patients and clinicians were focused on urgent issues or ones for which follow-up care was already planned.[19] Existing, unmet mental health needs were starkly apparent during the pandemic and are likely to persist as the stress of the pandemic continues to affect everyone. Federal policy should continue to emphasize the importance of mental health for all populations post-pandemic by ensuring true payment and access equity for behavioral and mental health services.

6. Government and the private sector must invest in data infrastructure to promote health and health equity.

The COVID-19 pandemic illustrated the limitations of outdated public health data systems at the national, state, and local levels and the need for a reliable public health data infrastructure supported by all levels of government to constantly assess progress and anticipate needs.[1] As one state official noted, “without a technology revolution ... the system cannot move as fast as the pathogen does.”[11]

This will also require common data elements and definitions; for instance, for vaccinations to be most effective, there needs to be a coordinated national plan for tracking so individual state registries are standardized, communicate across state lines, and are accessible to patients.

Additional investments and determination of essential data elements will help monitor, diagnose, treat, and track health problems in states and local communities. Congress should prioritize investments to support modernization of data systems at every level such that, at minimum, they are capable of consistent and interoperable collection and reporting of the key data elements with as much automation as possible.

Data collection and reporting must be supported by federal policymakers to enable efforts to improve health equity.

Federal policy must facilitate the collection of sociodemographic data like race and ethnicity as well as standardized, valid, inclusive data on social needs and social determinants of health. The CDC released a Social Vulnerability Index (SVI) in 2011 and noted that 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,”[20] though these data are not yet uniformly collected. Whether using the SVI or other approaches, these data will be critical to minimizing the disparities between communities in the next pandemic (and, hopefully, during intervening periods).

Health care inequities — including those that manifest during a pandemic — are deeply rooted in the conditions in which people are born, grow, live, work, and age. To create an effective framework to conduct meaningful outreach to underserved communities, health departments at all levels and other stakeholders must engage diverse citizen- and community-leader voices when developing response plans

that can better mitigate language barriers, cultural disconnects, and access to care for the most vulnerable populations. Congress can support partnerships between stakeholders through legislation, such as the Social Determinants Accelerator Act (HR 2503), to address the nonmedical factors of health.[21]

7. Federal and state policy must increase the supply and well-being of physicians and other health professionals.

Policymakers have often thought the nation's health workforce is sufficient when they assume a perfect delivery system, maximum preventive care, and no surge in demand. The nation has appropriately recognized the need for primary and outpatient care, the backbone of a robust health system. Yet the current crisis exposed a lack of elasticity in inpatient preparedness and a continued need for highly specialized health care personnel to care for acutely ill patients. No amount of preventive care would have completely avoided this pandemic.

Some flexibility in large systems was appropriately maximized; clinicians with inpatient critical care training such as hospitalists, pulmonologists, anesthesiologists, trauma, and other surgeons were temporarily redirected to care for the most critically ill patients. Outpatient personnel were deployed in the hospital or in public health, coordinating, telehealth, or other roles.

Even with maximum flexibility in the workforce, the nation must expand support for medical residency training to address current and future projected physician shortages, diversify the physician workforce to increase access to culturally appropriate care, and support and broaden the supply of providers in underserved areas. In a pandemic, supply and access are worsened for rural and other underserved populations. Increased funding for targeted programs such as the National Health Service Corps, Area Health Education Centers, and the public health workforce will provide added stability for all communities. Stability will also be improved by creating sustained legacy mechanisms for the Paycheck Protection Program and the Provider Relief Fund, at least until a full analysis of the current pandemic's impact on the workforce is completed.

A major threat to the well-being of clinicians is a lack of adequate human resources to ease the mental and physical toll on these critical providers as they are asked to do more.[22] Research already indicates that women physicians, especially those with children, have borne a disproportionate impact from COVID-19 as they took on greater dependent care responsibilities.[23] Without an adequate supply of clinicians, burnout is almost inevitable. Congress should support the full authorization and funding of legislation to provide stable investments in programs to prevent suicide, reduce burnout, and promote care for mental and behavioral health among physicians and other health professionals.[21] Investing in such programs, along with data collection and program evaluation, will be critical to help strengthen and maximize the health workforce for the next pandemic and for the everyday care of all.

Private organizations, including the National Academy of Medicine and professional societies, can provide additional data to policymakers to determine an agenda for improving clinician resilience.

8. Congress must continue its ongoing commitment to basic and clinical research.

The COVID-19 pandemic highlighted the need for sharing of information and resources and the need to strengthen common elements in a successful research agenda. Clinical researchers had to find ways to substitute in-person medical clinic visits for elective research. New strategies that used telemedicine, local

sample acquisition (instead of requiring trips to the clinical research site), and mail distribution of study drugs allowed some clinical trials to continue during the pandemic.

Basic science builds the knowledge base on which all clinical breakthroughs are made and must continue to be a priority to ensure future pandemics have the building blocks necessary to assemble an effective, rapid response. The fact that SARS-CoV-2 could be sequenced so quickly reflected years of study. The rapid understanding of its biology was possible because of years of basic science work in virology, immunology, and applied technology development.

Without the solid basic science of mRNA technology, the response to COVID-19 would have been far slower and the virus much more deadly. The federal government needs to continually invest in sustained and predictable funding for biomedical research, through NIH as well as other federal research agencies that fund basic research, interdisciplinary work, and translational science. We must continue to support evolving basic science research that could be crucial to responding to or preventing the next pandemic. Less formal operational research should also be federally supported. In the first months of the pandemic, there was no effective mechanism for dissemination of the evidence from multiple, ongoing clinical trials.

The AAMC deployed a COVID-19 Clinical Guidance Repository early on, allowing clinicians from the nation's academic medical centers to disseminate learnings from emergency rooms and intensive care units. Yet academic health systems and specialty organizations will need to improve their ability to quickly communicate with all clinicians as the nation better prepares for the next public health threat. Federal agencies (e.g., CMS, FDA) should continue to hold open door forums for providers to ask questions directly of policymakers, allowing for more direct lines of communication that can inform operational research efforts.

Policymakers should also allow for flexibility in medical research during a pandemic so researchers can act quickly to accelerate new medical countermeasures. Just as private and public partnerships with academia are effective approaches to supporting public health infrastructure, they can also stretch limited resources for research. Research facilities must also be supported in their real-life roles in fighting pandemics on a daily basis. For instance, federal regulators could facilitate this role by establishing clear rules and procedures for engagement of labs in testing for pathogens during a public health emergency. In addition, we must also enable science to continue even when in-person in vitro or in vivo work is disrupted. While there is no single strategy to ensure the ongoing survival of cell lines or animals critical to ongoing experiments, federal support and flexibility in regulations during a public health emergency — similar to what was enacted in clinical settings — should be allowed to limit the disruption to ongoing experiments.

9. The federal government should expand and improve health insurance coverage.

It is essential that all individuals have adequate health insurance coverage and access to quality care — and that their care is provided in their own communities whenever possible. A lack of health insurance (or underinsurance) perpetuates health care inequities, barriers to access, and patients' decisions to postpone timely care that could save their lives and prevent potential long-term disabilities. High-deductible health plans, which provide lower premiums, are not a viable option for filling the coverage gap due to high out-of-pocket costs. In the AAMC's *The Way Forward on COVID-19: A Road Map to Reset the Nation's Approach to the Pandemic*, we noted that the pandemic highlighted the vulnerabilities of the employer-sponsored health insurance system in which individuals who lose their jobs also lose their health

insurance and offered recommendations to address our nation's gaps in health coverage. These policy changes remain critical a year and a half into the COVID-19 pandemic.

The economic and health effects of the pandemic are likely to go on for years. The federal government should augment the nation's system of health insurance coverage so coverage is available regardless of employment status.

All states should expand Medicaid. Where gaps in health care coverage persist, there should be a federally subsidized mechanism with enrollment flexibility for all individuals who earn less than a target income.

Even with the recent incentives provided in the American Rescue Plan, to date, no new state has opted to expand Medicaid. For the states that do not expand Medicaid, the federal government could expand access to adults in the coverage gap by offering "look-alike" Medicaid coverage or leveraging the Marketplace for adults with incomes less than 138% of the federal poverty level. Regardless of the mechanism, the country should ensure access to insurance so all people, including those with chronic health issues and preexisting conditions, are able to maintain coverage despite loss of employment. In future public health emergencies, Congress must provide COBRA subsidies to help individuals who have lost their employment and associated health insurance. Congress should also consider reducing the 20-employee threshold for COBRA during the pandemic.

10. All stakeholders must commit to improving equity and patient-centered care through engagement with communities.

COVID-19 has exposed longstanding conditions that create social and economic inequality. These inequities are tied to health disparities, poor health outcomes, and lower life expectancy. This pandemic has exacerbated these inequities, particularly for people of color, the financially vulnerable, and other marginalized populations.[24] Meaningful changes must include a variety of equity-oriented approaches that infuse every recommendation discussed above. To leverage the time before the next major crisis, policymakers, health care leaders, and other stakeholders must make the health care system more responsive to the needs of diverse patients, families, and communities.

Stronger community collaborations should be encouraged by federal policymakers through funding incentives for these types of programs.

All stakeholders — public, private, federal, local — must promote meaningful community engagement and consider unique needs of all populations; and solutions must be made accessible to all communities by meeting individuals where they live and work.[25] Federal funding for programs that will establish, equip, and deploy truly mobile testing and vaccination units to serve hard-to-reach populations would be particularly effective if implemented with a commitment to community engagement, with grantees working in partnership with community-based organizations and leaders to develop resources, conduct outreach and program evaluations, and take other steps to appreciate community assets while understanding and meeting the community's needs. Mobile units can bring resources to the community rather than forcing the community to find the resources, not only during a pandemic but as a mechanism to improve access regularly. However, none of these programs will be successful without relationships that are truly collaborative, i.e., ones driven by and responsive to the needs of the communities themselves.

Importantly, a national conversation about trust must place the onus where it belongs: on our government and health care and public health institutions that for decades and centuries have demonstrated a lack of

trustworthiness through abuses, both historic *and* contemporary: When a new coronavirus emerged, the nation watched inequity and disparity worsen in real time.

Authentic community engagement is a first, foundational requirement. Doing the long-term, iterative work of demonstrating trustworthiness (using tools such as the AAMC Center for Health Justice *Principles of Trustworthiness*) will require institutional and sector-wide commitments to the resources, transparency, power-sharing, and humility required to meaningfully incorporate community wisdom into our preparedness efforts and establish our organizations as trustworthy partners.

Moving Forward

The nation must set these changes in motion now and conduct ongoing global surveillance for our nation's health security both in future pandemics and, potentially, for COVID-19 if variants that are not susceptible to current vaccines emerge or if vaccination rates do not continue to increase. As of August 2021, approximately 10% of the U.S. population has tested positive for COVID-19, and over 610,000 people have died from the disease. Four hundred eighty-nine million tests have been carried out, with 37 million positive results. The current seven-day positivity rate is 9.7%.[15]

More than two-thirds of the eligible population have received at least one dose of an approved vaccine, while community transmission remains at a high level.[26] Vaccination has demonstrated strong effectiveness in preventing hospitalizations and deaths, but in several states and many counties, less than half of their adult population is vaccinated, driving new surges. Although demand for the vaccine was initially strong, a sizable portion of the population remains hesitant about vaccination, causing an abundance of unused doses, particularly in some parts of the country.

With the highly infectious Delta variant spreading among the unvaccinated, the coronavirus is on the rise in many local areas. Willingness to receive the vaccine among African Americans is low, with just 31% of Black adults stating they would "definitely" receive the vaccine, compared with 46% of White adults. Personal doctors remain the highest trusted source of information, while trust in government agencies like the FDA remains moderately low.[27]

In 2021, much of the federal effort shifted to improving availability of the vaccines and promoting vaccinations. It will be critical to fund this work, its evaluation, and other efforts to improve public trust in science moving forward. Leaders must deploy effective messaging and information early and in each critical stage of this and any future pandemic.

If vaccination rates lag and variants continue to affect the country, national and local leaders in public health must continue to provide guidance on community-specific mitigation. The current administration has established several initiatives to achieve many of the recommendations in this document. Even if the end of the COVID-19 pandemic appears within reach, policymakers must begin to take these actions **now**, both to help the nation avoid the mistakes of this pandemic and to avoid making further errors as we hopefully eliminate the immediate and urgent threat posed by COVID-19.

Notes

A. Pfizer received a total of $5.97 billion, Moderna received $4.94 billion, and AstraZeneca received $1.2 billion, each for 300 million doses. Johnson and Johnson received $1.2 billion for 100 million doses of its one-dose vaccine. Additionally, the administration awarded Novavax $1.6 billion and Sanofi $2.04 billion, each for 100 million doses. As early as July 22, 2020, the White House entered into a contract with Pfizer for the first 100 million doses. As preliminary tests began to show promise, on Dec. 23, 2020, the White House purchased an additional 100 million doses, with the option to secure an additional 400 million doses.

B. AAMC analysis of physician and nonphysician claims billed by Faculty Practice Plan members of the Clinical Practice Solutions Center (CPSC) [unpublished data]. CPSC collects billing data from member practice plans to provide benchmarks and help them improve performance. At the time of this analysis (March 2021), 70 CPSC members had shared their claims data through November. “Evaluation and management visits” include all in-person and telehealth claims with CPT codes 99201-5 (new) and 99211-5 (established) across all applicable places of service, specialties, and payers. Telehealth visits identified were based on place of service code 02 and/or modifiers 95, GT, GQ, G0 on the claim.

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