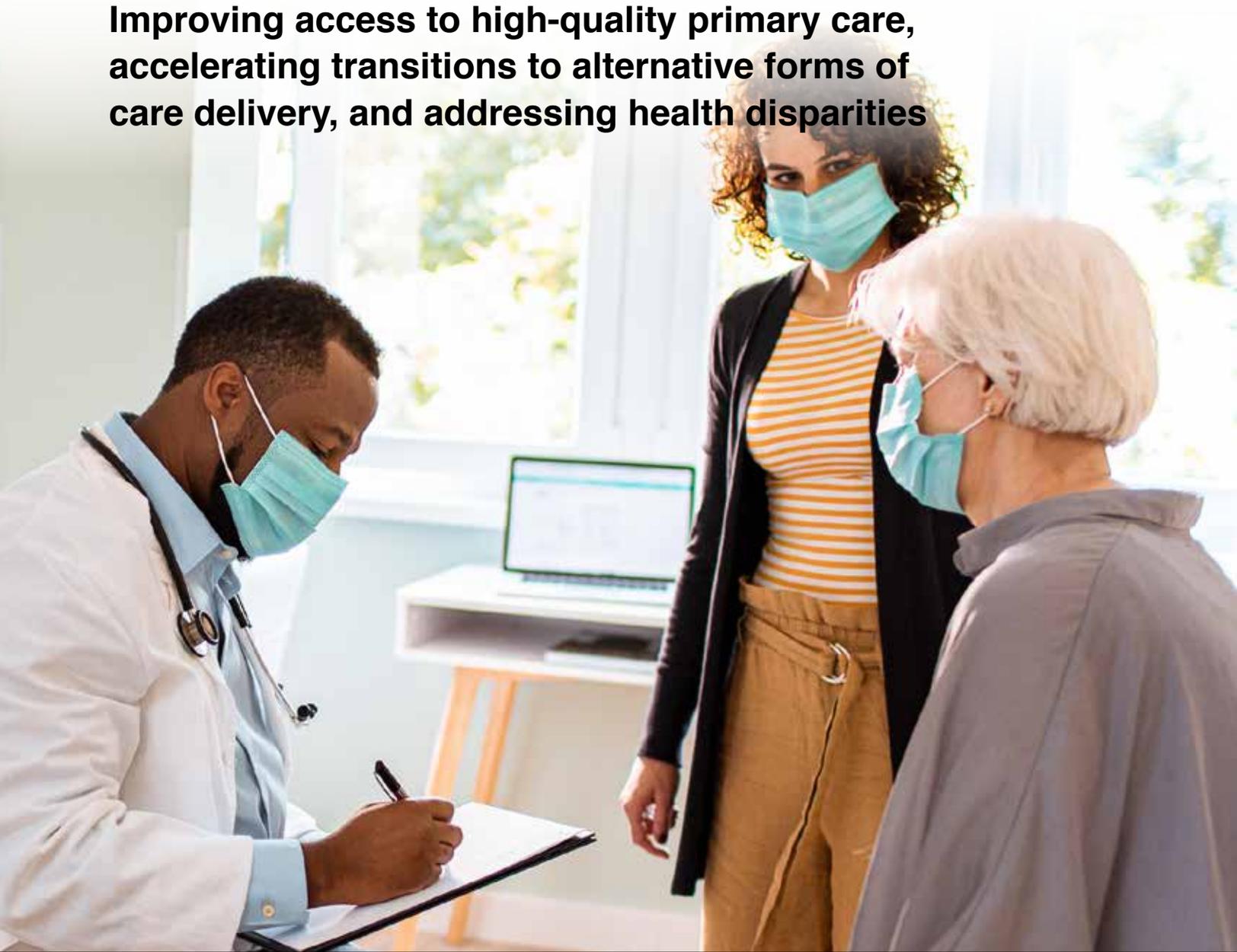


Primary Care in the COVID-19 Pandemic

Improving access to high-quality primary care,
accelerating transitions to alternative forms of
care delivery, and addressing health disparities



EDITED BY Sanjay Basu, MD, PhD, Director of Research | Jessica L. Alpert, Case Writer
Russell S. Phillips, MD, Center Director, William Applebaum Professor of Medicine;
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Introduction

Jessica L. Alpert and Russell S. Phillips

The COVID-19 pandemic has been a global disaster. A January 2021 report by the World Health Organization Independent Panel for Pandemic Preparedness and Response summarized the cascade of global missteps made during the course of the pandemic and the ways in which “we have failed in our collective capacity” to respond to the challenges posed by COVID-19.¹ In the United States, as of this writing, more than 400,000 people have died, in large part because of a failure of leadership and the lack of a national plan to confront and control the pandemic.² Scientifically proven methods of infection control such as masking, maintaining social distance, testing, and contact tracing were politicized and questioned rather than uniformly followed.^{3,4}

However, even if effective leadership had been in place, the United States was poorly prepared to confront such a pandemic. Public health and primary care, both essential to fighting infectious disease, are poorly funded.⁵ The payment structure for primary care was not optimized for telemedicine or for supporting practices when patients stay away due to fear of infection.^{6,7} Personal protective equipment was not stockpiled in adequate amounts to protect caregiving physicians, nurses, and other staff, and primary care physicians suffered the greatest mortality of any physician group.^{8,9} The Centers for Disease Control and Prevention, the usual source of leadership, scientific expertise, and guidance in the context of a pandemic, was sidelined and ridiculed by the leadership of the country.¹⁰ Unlike the United States, countries with better funding for and coordination of primary care and public health closed down their economies, mounted effective messaging and utilization of masking and social distance, and effectively implemented testing and contact-tracing programs, demonstrating that the pandemic could be controlled.^{11,12}

As of January 2021, much of the national discourse is centered on vaccine dissemination, with a particular focus on prioritization strategies for underserved and vulnerable populations disproportionately impacted by the pandemic. Despite the promise of vaccine availability, it is not clear whether the United States is sufficiently prepared to develop and operationalize vaccination allocation plans, leaving the potential for those at highest risk to be left behind.¹³

The rationale for developing this report and the proceeding chapters is to put a spotlight on (1) the ways in which countries failed or succeeded in overcoming the pandemic, (2) how primary care innovated in response to the pandemic, (3) lessons learned that might inform approaches to confronting future catastrophes, and (4) the ways in which innovation has served as a tool for driving health equity. Through these chapters we aim to address some key questions:

- How was primary care adversely impacted by the COVID-19 pandemic, and in what ways did the field innovate and adapt to the situation at hand?
- What is a framework for understanding the risks and opportunities posed by COVID-19 for primary care practices?
- How have marginalized and vulnerable populations been disproportionately impacted in the face of the COVID-19 pandemic?
- How did the social determinants of health and oppressive ideologies, including racism, ableism, and ageism, intersect and coalesce in the health inequities observed among communities and primary care patients?
- What lessons can be distilled from international experiences with COVID-19, and how can those lessons be leveraged to catalyze systemic and structural change in the United States?

The COVID-19 pandemic highlighted long-term inefficiencies and inequities in health systems globally, and societies struggled to mitigate the contagion and loss of life. The chapter authors celebrate the resilience, ingenuity, and devotion that primary care providers have shown during this time of uncertainty and loss. Their writings ultimately serve as an important reminder that if systemic barriers remain unaddressed, equitable, accessible, and sustainable primary care delivery will remain an empty promise for our patients and communities.

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SECTION 1: CHALLENGES OF COVID-19 TO PRIMARY CARE ACCESS AND QUALITY

Chronic Care Management During the COVID-19 Pandemic

Aaron Baum

Upward of 60% of American adults have a chronic health condition, and 70% of deaths in the United States are caused by one.¹ The most common chronic conditions, including hypertension, hyperlipidemia, and diabetes, share a set of biological risk factors, such as obesity, high blood pressure, elevated blood glucose, and abnormal blood lipids, and behavioral risk factors, such as tobacco use, excessive alcohol, poor nutrition, and physical inactivity. Many of these risk factors are responsive to clinical interventions provided during routine care and can be exacerbated by unemployment, loneliness, and stress.

The high prevalence of chronic conditions in the United States has increased the direct and indirect burden of disease from the SARS-CoV-2 pandemic. Individuals with a chronic condition are more likely to experience a severe outcome due to infection²⁻⁴ and a prolonged recovery and sequelae.⁵ Additionally, among the approximately 80% as-yet uninfected adults⁶ and those individuals who experience a mild course of illness after infection, the indirect burden of disease from the virus may largely be determined by the extent to which morbidity from highly prevalent chronic conditions worsens because of reduced use of routine care⁷ and deteriorating psychosocial conditions.^{8,9} Indeed, early evidence of excess mortality during the pandemic suggests that COVID-19 is a cause in approximately two-thirds of estimated excess deaths. Among the remainder are deaths related to nonrespiratory underlying causes, including diabetes, heart disease, and cerebrovascular disease.^{10,11} Although many of these deaths may be directly caused by COVID-19 but misclassified (e.g., in part due to lack of widespread testing), others are likely related to the indirect consequences of the pandemic on chronic conditions (e.g., delayed use of emergency services for acute exacerbations of chronic conditions that benefit from timely treatment).^{12,13}

The diagnosis and management of chronic conditions is predominantly the responsibility of primary care physicians,¹⁴ who are in the midst of tremendous financial strain because of declining fee-for-service revenues.^{15,16} The pandemic has necessitated that chronic care be delivered in ways that decrease the risk of transmitting SARS-CoV-2 to patients. This challenge to care delivery was collectively experienced by essentially every outpatient practice in the country. Because of their central role in delivery and payment reform initiatives, many primary care practices have

experience using population health management strategies that became acutely relevant during a pandemic that exacerbated preexisting health and socioeconomic disparities and that challenged providers to leverage technology to deliver care in innovative ways.

In this chapter, I review the early empirical evidence on changes to chronic care delivery during the pandemic, as well as trends in major risk factors for morbidity from common chronic conditions. We close by describing ways that population health management approaches, including panel management, team-based care, and social service integration, aided primary care practices in managing chronic conditions during the pandemic.

How chronic care delivery changed during the pandemic

Visits for chronic care during the pandemic

Across all areas of the United States, evidence from multiple sources—including a convenience sample of 50,000 outpatient providers,⁷ a nationally representative audit of primary care practices,¹⁷ and the universe of outpatient Veterans Affairs clinics¹⁸—suggests that primary care volume declined by approximately 25%–50% during the first four months of the pandemic, and then rebounded by August 2020 to level off at a decline of approximately 10% compared to prior years. The share of visits delivered by phone or video increased dramatically, amounting to approximately 35% of primary care visits during the first four months of the pandemic relative to a pre-pandemic baseline of 10% of visits.

Given the sharp reduction in the use of primary care, a key question is whether the decline was disproportionately driven by patients with chronic conditions. I was unable to identify studies evaluating changes in the clinical composition of patients who used primary care during the pandemic. To address this gap in the literature, I used national-scope electronic health records data including diagnoses, procedures, labs, vitals, and medications sourced from participating members of the Healthjump network, which was made available through the COVID-19 Research Database.¹⁹ I restricted my analysis to office visits (Healthcare Common Procedure Coding System codes 99201–99205, 99211–99215, 99241–99245, G0402, G0438, and G0439) at outpatient practices that continuously belonged to the Healthjump network since 2016.

Using the Healthjump data, we observed that the number of overall, in-person, and telehealth visits declined similarly among patients with versus without a prepandemic history (two or more diagnosis visits) of hypertension, hyperlipidemia, diabetes, depression, heart disease, and congestive heart failure, respectively (Figure 1). Further, for patients with a history of hypertension and diabetes prior to the pandemic, visit trends were similar among those whose condition was well controlled versus poorly controlled during their last visit preceding the pandemic (Figure 2). This suggests patients were neither more likely to drop out of chronic care nor more likely to be prioritized for visits (e.g., via outreach or other panel management efforts) during the pandemic as a function of their prepandemic health status.

Given disparities in the prevalence of chronic condition by age, race, and ethnicity, a related question is whether the demographic composition of patients who continued to use primary care during the pandemic was similar to the composition of patients who used primary care before the pandemic. Although visit rates for children remain substantially lower than for adults, among adults overall rates did not meaningfully vary by age (though middle-aged adults may have increased their use of telehealth more than other age groups).^{7,17} Data from the primary care practices of UCSF General Internal Medicine Practice and Zuckerberg San Francisco General Hospital suggest that immediately after the onset of the pandemic, the visit share of Black and Latino patients significantly dropped, while the visit share of white patients increased.²⁰ In contrast, results of a nationally representative audit of primary care practices indicate that primary care visits declined by 17% among white patients over the first four months of the pandemic relative to the same four months of 2019, but by only 5% among Black patients.¹⁷

Changes in monitoring of major risk factors

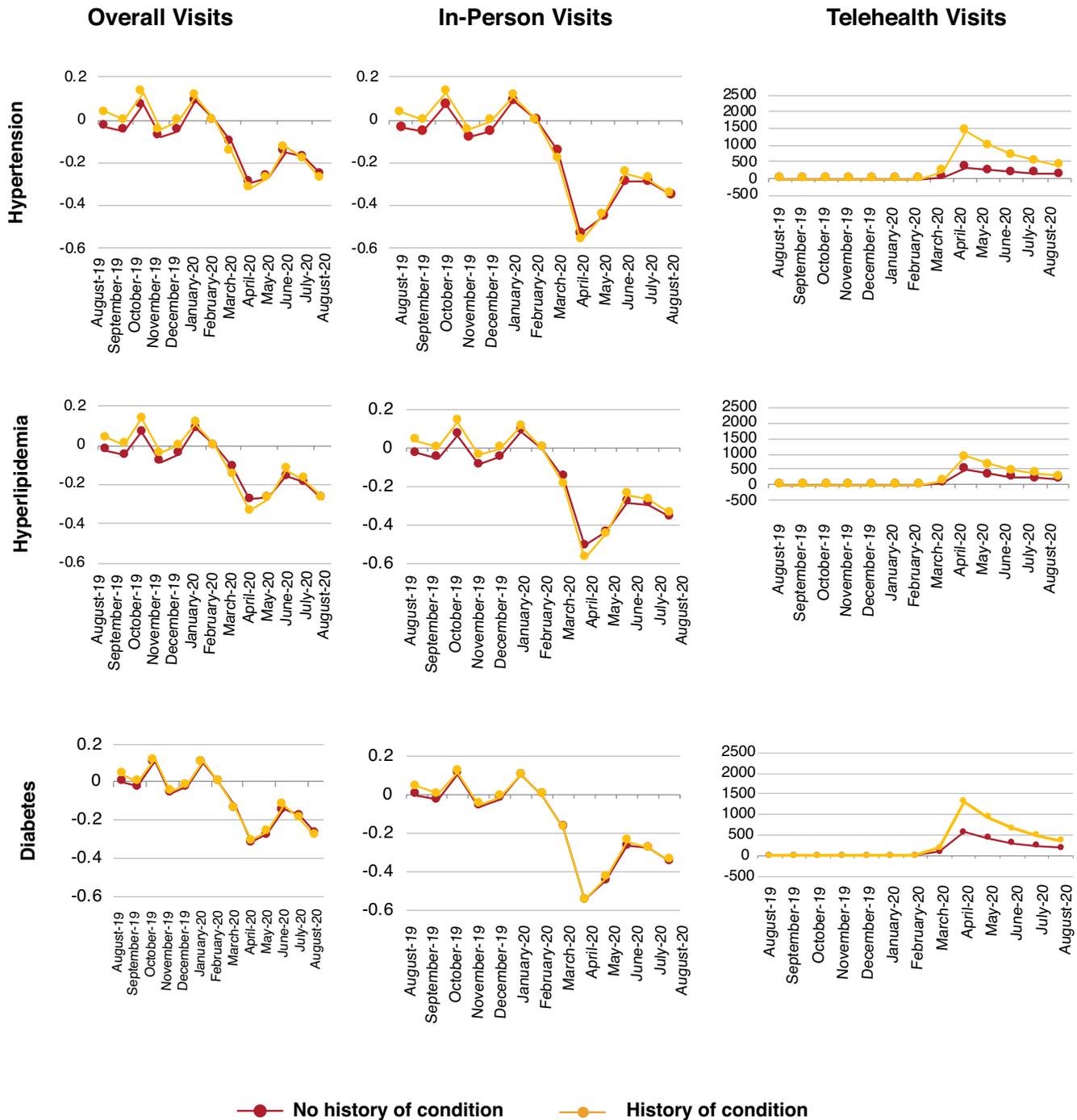
As a consequence of the substitution of telehealth visits for in-person visits, the structure and content of chronic care encounters changed during the pandemic. For example, audits of a nationally representative sample of primary care practices indicate that blood pressure and cholesterol assessments declined during the first four months of the pandemic by 50% and 37%, respectively, driven by the decline in in-person visits.¹⁷ Consistent with this, an IQVIA medical claims data analysis estimates there was a reduction of 19% in office visit lab orders between March and September 2020, relative to the same time period in 2019. Regarding behavioral risk factors, data we analyzed from a national cohort of adults who used the Veterans Health Administration during the pandemic suggest that the number of routine verbal screenings for alcohol use, depression, post-traumatic stress disorder, and suicidal ideation—which are feasible to administer during phone and video visits, but are typically conducted by nurses in advance of a patient seeing a physician—declined by 39% in April and 37% in May 2020 compared to February, and then rebounded to a decline of only 5% by August (Figure 3).

Changes in new diagnoses

Likely as a consequence of reduced monitoring of biological and behavioral risk factors, the nationally representative audit of primary care practices showed that first visits for hypertension treatment declined by 39% during the pandemic; similarly, first visits for high cholesterol treatment declined by 27%, first visits for depression treatment declined by 23%, and first visits for diabetes treatment declined by 16%.¹⁷

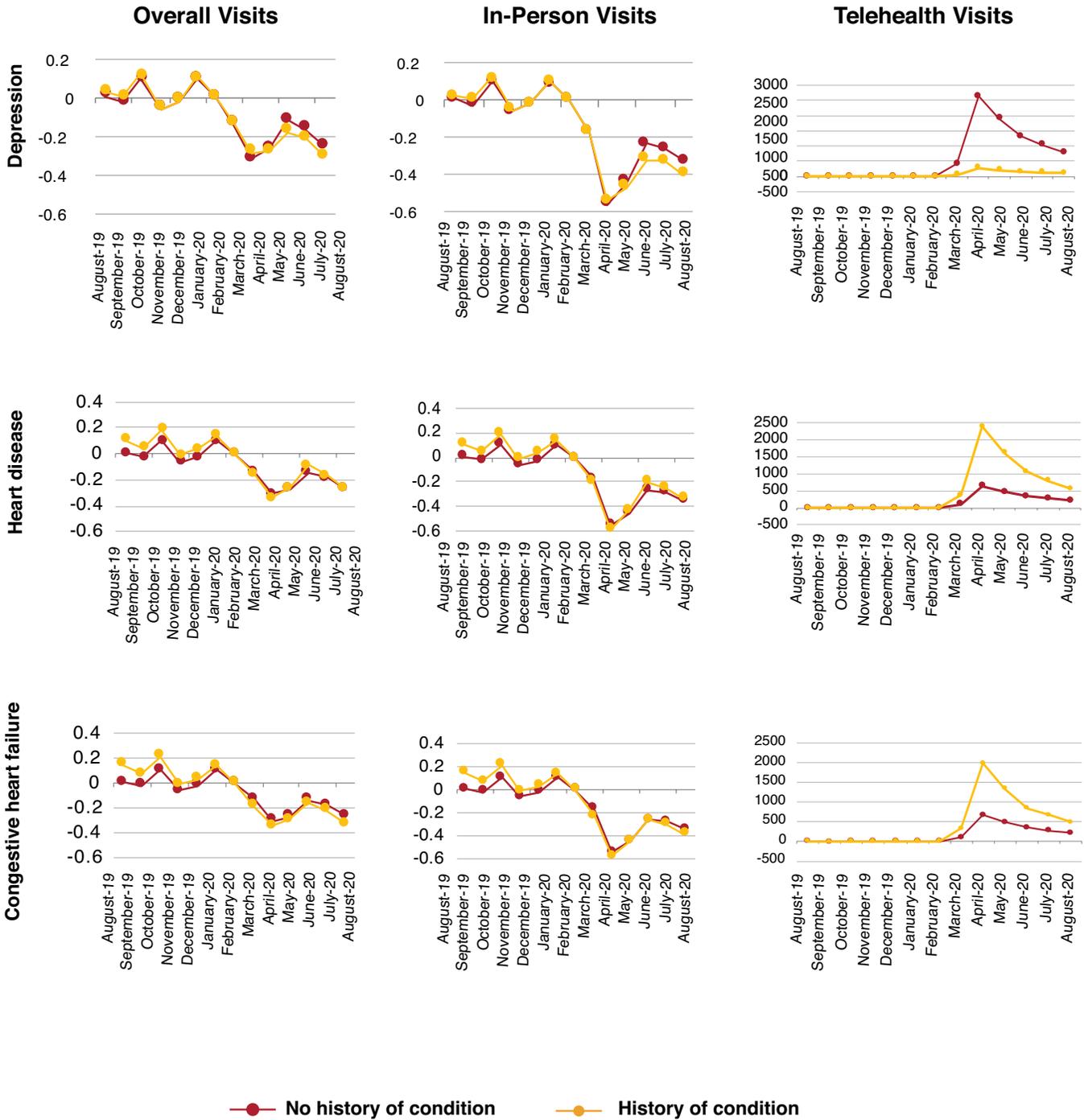
Consistent with this, our analysis of electronic health records data from the Healthjump platform suggests that the number of patients receiving their first diagnosis of six chronic conditions—hypertension, hyperlipidemia, diabetes, depression, heart disease, and congestive heart failure—declined by between 30% and 40% in April 2020 relative to February 2020, then rebounded back to, and in some cases, above, prepandemic levels by August (Figure 4). This result is consistent with a diagnosis backlog model developed by IQVIA, which predicts a

Figure 1. Trends in Overall, in-Person, and Telehealth Visits Among Patients With and Without Chronic Conditions Prior to the Pandemic



This figure is based on electronic health records data from office visits to outpatient practices that continuously used the Healthjump data management service between July 1, 2016, and September 1, 2020. The patient population is the cohort of patients with a visit to any of these practices prior to March 1, 2020. Prepandemic history of chronic condition was defined as a patient receiving two or more diagnosis codes for the chronic condition prior to March 1, 2020. Telehealth visits were determined based on the claim modifier codes 95 or GT.

Figure 1 continued.

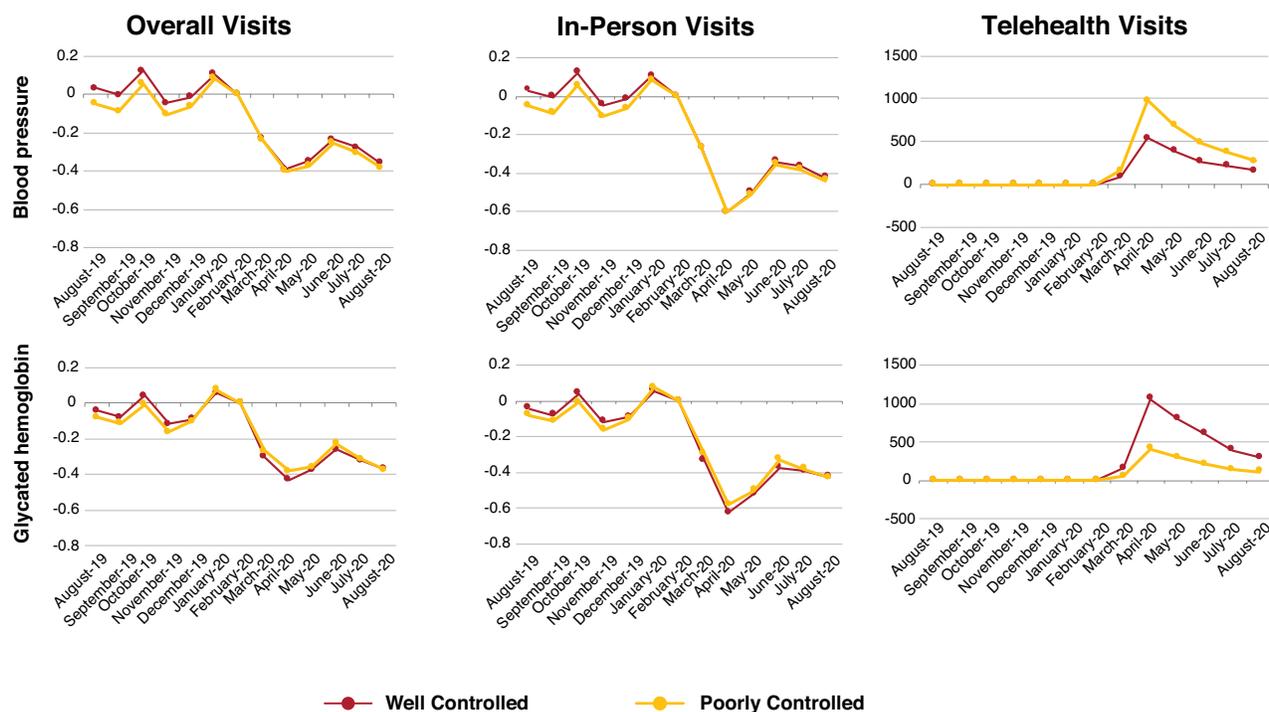


This figure is based on electronic health records data from office visits to outpatient practices that continuously used the Healthjump data management service between July 1, 2016, and September 1, 2020. The patient population is the cohort of patients with a visit to any of these practices prior to March 1, 2020. Prepandemic history of chronic condition was defined as a patient receiving two or more diagnosis codes for the chronic condition prior to March 1, 2020. Telehealth visits were determined based on the claim modifier codes 95 or GT.

14% cumulative percent reduction by the end of 2020 in new diagnosis visits overall, with the largest backlog expected for chronic condition diagnoses.²¹

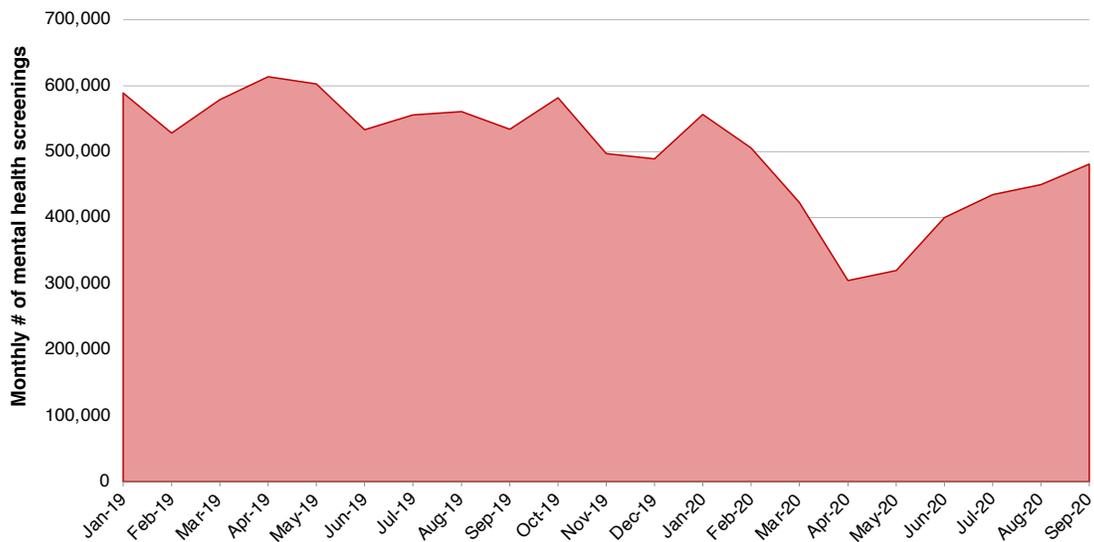
Though it remains unclear whether delayed diagnoses will impact patient outcomes, this backlog of new chronic condition diagnoses is concerning, particularly for time-sensitive conditions. For example, modeling studies predict poorer survival outcomes as a consequence of the decline in cancer screenings, which are expected to cause delayed diagnoses that translate to later-stage presentations and delayed surgeries.^{22,23} Further, it is plausible that patients who postponed care will present later in the course of their disease with worse symptoms at the time of initial diagnosis. For hypertension and diabetes, our analysis of the Healthjump data suggests that among patients with a new diagnosis, mean systolic blood pressure and HbA1c were transiently elevated in May of 2020 (Figure 5). However, because rates of in-person visits were also much lower in May, this pattern may simply be driven by healthier patients delaying in-person visits more than sicker patients.

Figure 2. Trends in Overall, In-Person, and Telehealth Visits Among Patients With a History of Hypertension and Diabetes Prior to the Pandemic, by Whether Their Chronic Condition Was Well Controlled Versus Poorly Controlled in Their Last Visit Before the Pandemic



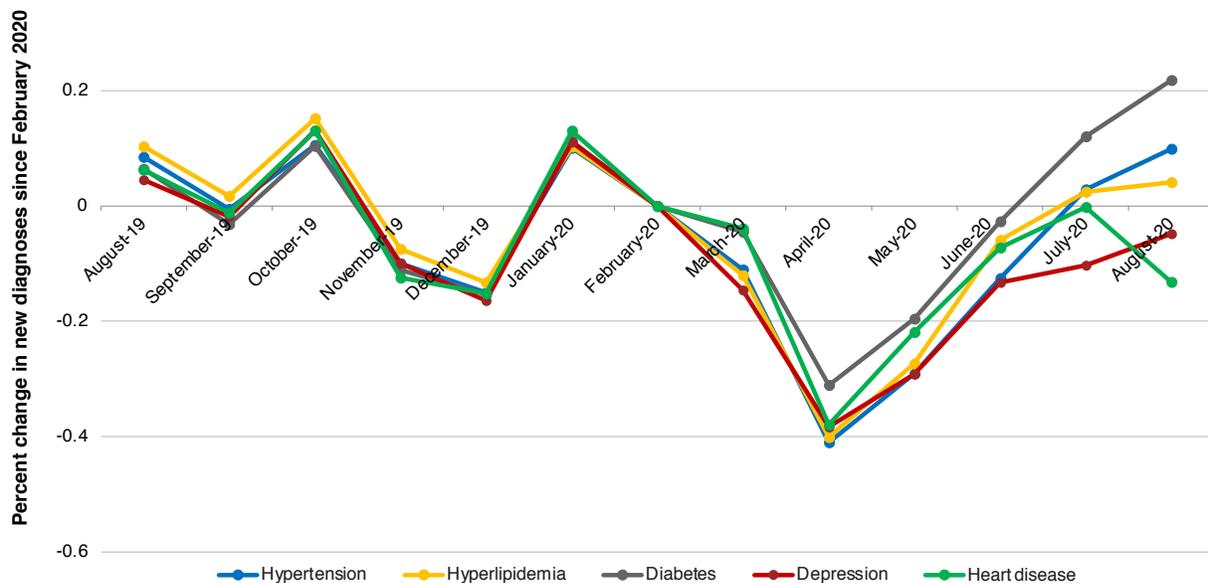
This figure is based on electronic health records data from office visits to outpatient practices that continuously used the Healthjump data management service between January 1, 2016, and September 1, 2020. The patient population is the cohort of patients with a visit to any of these practices prior to March 1, 2020, and a history of hypertension and diabetes prior to the pandemic (defined as a patient receiving two or more diagnosis codes for hypertension or diabetes prior to March 1, 2020). Well-controlled versus poorly controlled hypertension and diabetes was based on a patient’s blood pressure > 140/90 mmHg and A1c > 8%, respectively, during their last visit before the pandemic (visits up to six months before March 1, 2020, were included). Telehealth visits were determined based on the claim modifier codes 95 or GT.

Figure 3. Trends in Routine, Verbal Screenings for Alcohol Use, Suicidal Ideation, Depression, and Post-Traumatic Stress Disorder (PTSD) Among a National Cohort of Veterans



This figure is based on electronic health records data from the Veterans Health Administration (VHA) Corporate Data Warehouse, a national repository of electronic health records from visits to VHA facilities. The cohort includes adults who first enrolled in VHA care prior to 2019. We report monthly counts of screenings for alcohol misuse (AUDIT-C score >4 for men and >3 for women), suicidal ideation (Item 9 from the PHQ-2-19 >1), depressive symptoms (PHQ-2 >2), and PTSD symptoms (PC-PTSD >3).

Figure 4. Trends in the Number of Patients Per Month Receiving a First Diagnosis of Common Chronic Conditions



This figure is based on electronic health records data from office visits to outpatient practices that continuously used the Healthjump data management service between January 1, 2016, and September 1, 2020. The patient population is the cohort of patients with a visit to any of these practices prior to March 1, 2020. A patient's first diagnosis of a chronic condition was determined as the date of the first visit during which the patient received a diagnosis code for that condition.

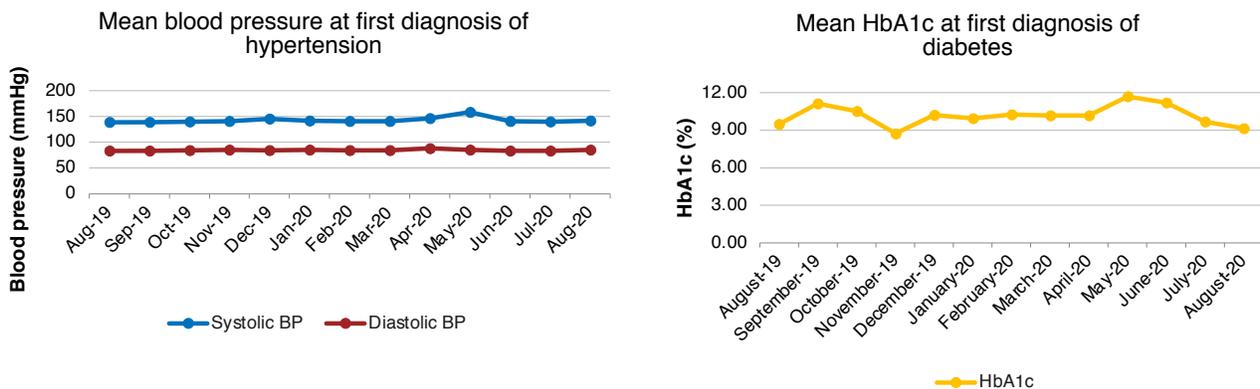
Changes in prescriptions

Among primary care practices overall, new medications were initiated 26% less often during the first four months of the pandemic compared to prior years, while continuing medications were prescribed 9% less often, per the nationally representative audit study.¹⁷ The IQVIA National Prescription Audit report indicates that the volume of “new-to-brand” prescriptions (e.g., patients starting a prescription drug they have not previously used) written by primary care physicians was down 13% between March and August 2020 compared to the same period in 2019, though overall prescriptions were down only 4%.²¹ The IQVIA report speculates that the driver of this decline is that telehealth visits generated 33% fewer new prescriptions than office visits during 2020. The report also notes that changing patterns in in-person and mail-in fills, including growth in extended fills, may affect adherence and compliance considerations as patients make fewer trips back to the pharmacy.

Changes in common risk factors for poor chronic disease control during the pandemic

It is too early to identify the population health consequences attributable to changing patterns in patients’ use of routine care, less information being available to physicians at the point-of-care, and the decline in new chronic condition diagnoses and new-to-brand prescriptions, though previous studies suggest that delayed access to primary care may impact the prevalence and control of chronic conditions.^{24,25} Although further research is required to measure changes in morbidity and mortality related to changes in chronic care during the pandemic,

Figure 5. Blood pressure and Glycated Hemoglobin Levels Among Patients With a New Diagnosis of Hypertension and Diabetes, by Month



This figure is based on electronic health records data for office visits to outpatient practices that continuously used the Healthjump data management service between January 1, 2016, and September 1, 2020. The patient population is the cohort of patients with a visit to any of these practices prior to March 1, 2020. A patient’s first diagnosis of a chronic condition was determined as the date of the first visit during which the patient received a diagnosis code for that condition.

several studies—largely from outside of the United States, as the major representative surveys of risk factors in the United States, such as the Behavioral Risk Factor Surveillance System, are generally updated annually—have evaluated how shared risk factors for complications from chronic disease, including tobacco use, alcohol use, unhealthy diet, and lack of exercise, have changed during the pandemic.

Tobacco use

Although concerns about becoming seriously ill from COVID-19 could reduce tobacco use, higher than usual levels of stress and isolation could increase it. A cross-sectional survey of 53,000 adults conducted in April 2020 in the United Kingdom found that, among the current smokers surveyed, a considerably higher proportion reported a recent increase in smoking (42%) than reported smoking less (13%).²⁶ A 6,800-person survey conducted in April 2020 across Italy, India, South Africa, the United Kingdom, and the United States found that a majority of respondents had maintained or increased use of tobacco products, while only a quarter of respondents reported reducing their use. In contrast, data from a series of 1,000-person monthly surveys that is representative of adults in England found no change in smoking prevalence in April 2020 compared to prior years, but a small increase in quit attempts.²⁷

Alcohol use

Several pieces of evidence suggest increased alcohol use during the shelter-in-place period. Though mandatory closure of bars would be expected to decrease alcohol use, March 2020 data from Nielsen showed a 54% increase in sales of alcohol in the United States compared with one year before, likely reflecting stockpiling.²⁸ More recent data from the nationally representative RAND Corporation's American Life Panel found 75% of adults consumed alcohol one day more per month during the spring of 2020 compared to the spring of 2019.²⁹ Further, heavy drinking rose 41% among women. Thus, while social alcohol use may have declined, alcohol use at home—where higher-risk, heavy users tend to consume it—appears to have increased, raising concerns that long-term, excessive alcohol misuse might escalate into an alcohol use disorder during the pandemic.³⁰

Unhealthy diet

The United States Department of Agriculture (USDA) reported that, nationally, money spent on food away from home dropped from \$67 billion in February 2020 to \$54 billion in March, then bottomed out at \$36 billion in April.³¹ In contrast, sales of food at home increased over the same period. Because food at home is less caloric and has less saturated fats and sodium, diets may have improved during the shelter-in-place period. Consistent with this, responses among participants in five large cohort studies in the United Kingdom to an online questionnaire indicated moderate increases in fruit and vegetable consumption during the pandemic, including among individuals eating more meals at home.³²

Conversely, increased unemployment during the pandemic expanded the need for nutrition assistance. The Centers for Disease Control and Prevention (CDC) Household Pulse Survey

data from mid-September 2020 suggest that 8% of adults in the country reported that their household sometimes or often didn't have enough to eat in the last seven days because they "couldn't afford to buy more food."³³ National data from the USDA indicate that in May 2020 the number of Supplemental Nutrition Assistance Program (SNAP) participants was 17% higher than in February 2020, an unprecedented growth rate.³⁴ However, SNAP's capacity to rapidly expand to meet the increased demand varied geographically, leaving many food-insecure households without access to affordable nutritious food. Further, many eligible individuals do not receive public benefits from safety-net programs that they qualify for. For example, after Texas temporarily simplified the SNAP application process by removing paystub, work, and interview requirements in late March 2020, the Texas Health and Human Services Commission reported receiving four times as many applications for benefits in April 2020 as in April 2019, doubling the already historically high number of applications filed in March 2020.³⁵ Nonetheless, a cross-sectional online survey in May 2020 found high rates of food insecurity among young adults in Texas, with the two strongest predictors of food insecurity changes in housing and loss of employment as a direct result of the COVID-19 pandemic.³⁶

Lack of exercise

According to data recorded between January and June 2020 by a convenience sample of 240,000 US-based users of a free health and wellness smartphone app, there was a 20% decline in daily step count during March and April relative to January and February, and a 10% decline during May and June 2020.³⁷ Similarly, a longitudinal study of 5,000 UK-based users of a smartphone app between January and June 2020 found a 37% reduction in weekly minutes of physical activity during the pandemic, with greater reductions among younger and more active people.³⁸ Although these declines reflect a combination of changes to exercising and to activities such as commuting and shopping, a smaller study of 1,824 young adults in Singapore using data from wearable sensors found that changes in moderate-to-vigorous physical activity decreased 31% during the pandemic compared with a decrease of 38% in overall step counts.³⁹

Tools primary care physicians used to provide chronic care during the pandemic

The disruption to routine care delivery in combination with the disparate exacerbation of risk factors challenged providers to deliver chronic care in innovative ways. In response, many primary care practices used population health strategies, tools, and data—including panel management, team-based care, and social service integration—to continue delivering high-quality chronic care during the pandemic.

Panel management

As the frequency of in-person interactions with patients decreased, the value of proactively engaging with patients—reviewing patient lists, reaching out to higher-risk patients, and

offering care on the basis of the patient's potential risk and benefit from a visit—between visits increased. Many practices with preexisting panel management data and infrastructure reported adapting them to the pandemic.⁴⁰

One case study was reported by primary care physicians in the Division of General Internal Medicine at Massachusetts General Hospital.⁴¹ Their clinics used a real-time clinical registry that captured information on patient appointments and prescriptions to prioritize outreach activities, for example, reaching out to a patient who had failed to refill a prescription. Innovatively, they also allowed patients to input self-reported data on behavioral risk factors as well as social determinants and provided patients with home monitoring devices that fed blood pressure levels into the platform. This allowed their coordinators to prioritize outreach to patients who experienced a change in psychosocial conditions or chronic condition control, as well as to those who missed appointments or delayed medication refills.

Team-based care

Delivering high-quality virtual primary care was a challenge as practices massively ramped up telehealth services in the midst of the pandemic. A side effect of the virtual care setting is that patient flow through the office is disrupted, as physicians, nurses, care managers, and schedulers no longer share an office space. As a consequence, telehealth visits often abandon the initial portion of the visit during which nurses assess vital signs and conduct brief verbal screenings to assess behavioral risk factors. Thus, not only were fewer changes in patients' biological risk factors detected, likely leading to fewer new diagnoses and prescriptions, but changes in behavioral risk factors also went undetected, likely leading to fewer interventions related to tobacco cessation, substance abuse, and depression.

An example of an organization that invested in a virtual team-based primary care delivery model that uses established patient-centered medical home principles is the Veterans Health Administration (VHA). Prior to the pandemic, the VHA developed a model to provide virtual team-based primary care services to veterans in rural and underserved areas, which it expanded during the pandemic.⁴²⁻⁴⁴ The model includes a central hub that houses primary care physicians, mental health staff, and clinical pharmacy specialists. During a telehealth visit, a primary care physician can add a team member to the patient's video visit to provide a warm handoff—for example, adding a mental health team member to conduct a brief assessment one-on-one with the patient. The model innovatively allows for a hybrid in-person and telehealth visit in the event a physical exam is needed. In this case, local nursing staff can see a patient in an exam room equipped with technology that allows for a video call between the patient's primary care team and the patient, during which findings and images from the in-person exam are shared in real time. While the share of telehealth visits recedes to pre-pandemic levels for other health systems, the VHA has continued to expand use of and investment in video visits.⁴⁵

Social service integration

The scale of socioeconomic disruption during the pandemic has highlighted the importance of care models capable of engaging with patients' social needs.⁴⁶ Millions of adults experienced unemployment and declining household income that put their households at greater risk of food and housing insecurity.⁸ The mid-September round of the CDC's Household Pulse Survey found that one in three adults reported it was somewhat or very difficult for their household to cover usual expenses in the past seven days.³³ These unmet social needs have been shown to increase the risk of developing common chronic conditions and impair a person's ability to manage these conditions.⁴⁷⁻⁵⁰

A case study on enhanced clinical–community linkages was reported by the leadership and staff at the Contra Costa Health Service, a safety–net county health system in Northern California.⁵¹ Before the pandemic, it had established a large case management program offering coaching and social services to Medicaid beneficiaries, powered by a data set that linked individuals' insurance claims, medical records, and social service utilization. During the pandemic, program staff analyzed the data set to model and rank each Medicaid beneficiary's risk of hospitalization from COVID–19. Case managers called the most high–risk individuals to assess their social needs through a 21–item questionnaire. Leveraging established cross–sectional partnerships, case managers provided information on local food pantries, assistance with applications for public benefits (e.g., SNAP), and referrals to legal aid (e.g., related to evictions). Patients' responses to the questionnaire were recorded in the health system's electronic health records to provide physicians with information at the point of care on patients' food insecurity, housing instability, unemployment, and social isolation. Particularly in disadvantaged communities, health systems that are able to coordinate with social services through cross–sectional partnerships and shared data resources will be better positioned to manage their patients' chronic conditions and support community resilience over the long term.

Conclusions

In conclusion, during the pandemic thus far, fewer patients with preexisting chronic conditions used primary care, primary care practices had less data on their patients' biological and behavioral risk factors, fewer new medications were prescribed, and a backlog of undiagnosed new chronic conditions accumulated. Additionally, early evidence suggests that, on average, alcohol use increased and physical activity decreased during the pandemic. The evidence also suggests that overall trends in behavioral risk factors likely mask clinically relevant heterogeneity, as the pandemic exacerbated disparities in underlying economic conditions in opposite ways for different populations (e.g., remote employees eating healthier meals at home versus newly unemployed individuals with worsened food insecurity).

In combination with widespread escalation of socioeconomic adversity, these changes in chronic care delivery and behavioral risk factors may have contributed to the observed increase in deaths during the pandemic that were unrelated to COVID–19.¹¹ Finally, case studies suggest that many primary care practices successfully leveraged their population health experience in panel management, team–based care, and social service integration in order to adapt their model of chronic care delivery to the myriad challenges imposed by the pandemic.

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Addressing COVID-19 Proactively Through Primary Care in England's National Health Service

Azeem Majeed

Health systems across the world have made radical changes to help manage the COVID-19 pandemic in their own countries.¹ As primary care is the patient's first point of contact with the health system, these changes have had a dramatic effect on primary care services, including in England's National Health Service (NHS). Changes in how health services were provided had to be implemented quickly once the scale of the pandemic that England was facing became apparent, and the potential risks to both patients and primary health care staff became apparent.

Organization of primary care in England

Primary care in England is largely government-funded.² Every resident of England is able to register with a general practice (irrespective of their immigration status), which then becomes their first point of contact for most health problems, and their gateway to investigations and referrals to specialist services. There are no payments for consultations with professionals working in general practice, such as general practitioners (primary care physicians), pharmacists, and nurses. Some patients do pay a fee for their drugs (£9.15 per item, around \$12). However, many groups of patients are exempt from this charge and only around 10% of prescriptions are issued to patients who are required to pay.

Although private (paid-for directly by the patient) primary care services have increased in recent years (mainly via online providers), the use of these services remains low. The vast majority of England's population remain registered with an NHS general practice, which is their sole or main provider of primary care.

NHS general practices are largely funded through capitation payments from government, with only a small proportion of income coming from other sources such as NHS quality incentive schemes, pay-for-performance programs, and fee-for-service activities. During the turbulence caused by the COVID-19 pandemic, with radical changes implemented in a very short period of time, this system

of funding has provided financial stability for general practices. This was often not the case for many primary care practices in the USA or elsewhere that are more reliant on fee-for-service payments, and where there were often large reductions in income because of a decline in the number of patient consultations.^{3,4}

Planning for the pandemic

The first confirmed cases of COVID-19 in England were identified at the end of January 2020. Cases increased during February, and by early March, it became apparent that England was facing a large COVID-19 epidemic. This led to the Department of Health and Social Care and NHS England (the bodies that respectively fund and manage the NHS in England) to recommend radical changes to the provision of NHS primary care services to improve infection control and increase remote consulting, and thereby reduce the risk of nosocomial infection.

For most general practices, these changes began to be implemented in the week beginning March 16, 2020. As a first step, general practices switched from the traditional model of face-to-face service provision to one where all patients were initially assessed through a telephone or video call. Patients were encouraged to register for online booking of these appointments if they had not already done this. All patients requesting advice spoke first to a health professional, usually general practitioners but sometimes primary care nurses or pharmacists. The aim was to deal with as many queries as possible by telephone or a video call. Patients who after this remote assessment then required a face-to-face appointment were booked to be seen later that day wherever possible. This ensured that patients were largely managed on the same day they sought medical advice. These changes resulted in around three-quarters of patients being managed remotely during the earlier part of the pandemic; in contrast, at the same time in 2019 only around one-quarter of patients were managed remotely. The total volume of primary care activity (as measured by the number of consultations) also fell by about 25%.⁵ In subsequent months, there was a gradual increase in primary care activity and also an increase in the proportion of activity that was carried out using face-to-face consultations, as consulting patterns began to return to a more normal mode of delivery.

Patients with symptoms that may have been due to COVID-19 infection were usually seen in dedicated respiratory clinics in general practices with the general practitioner wearing personal protective equipment (PPE). By early April, wearing PPE had become standard practice for all face-to-face consultations because of concerns about exposure to patients with asymptomatic infection. In an attempt to keep general practices clear of patients with COVID-19, most parts of England also began to set up dedicated “primary care COVID-19 hubs.”

These hubs served a network of general practices in a locality and saw patients with suspected COVID-19 infection who needed face-to-face assessment (for example, because of a prolonged illness or a deterioration in their clinical state). In some areas of England, COVID-19 home visiting services were also put in place by the NHS to see patients at home who would find it difficult to travel to a hub, or for whom hospital admission was inappropriate. Finally, some primary care providers have also developed mobile oxygen saturation monitoring, where a member of staff is deployed to obtain a rapid reading from a patient at home. This is used

when oxygen saturation level may be the only discriminator of serious illness, such as in silent hypoxia.

Information technology in primary care

For many years, the NHS has been investing to improve information technology in primary care. Changes during the pandemic were greatly helped by this existing information technology infrastructure. This includes full computerization with all NHS general practices using electronic medical records; online access for patients to services such as appointment booking, ordering repeat prescriptions, and viewing medical records; and the NHS Electronic Prescription Service, whereby a prescription can be sent electronically by the physician to a pharmacy of the patient's choice anywhere in England. This electronic prescription service was very helpful for general practitioners and patients, as it soon became apparent that many people had moved away from their usual locations, particularly from large urban centers such as London, to be closer to their families when the country went into lockdown in March 2020.

The full computerization of NHS primary care also allows primary care physicians to work remotely from their main clinical site (usually from their home) but still have the ability to obtain access to medical records, order investigations, and issue prescriptions. This has allowed primary care physicians who are unable to work in clinical settings to continue to offer telephone and video consultations from home, and to review the results of laboratory tests and letters from specialists and other agencies. This is important for older physicians, physicians who are pregnant, and physicians who have a medical problem that places them at increased risk of complications and death from COVID-19. It also means that physicians who are "self-isolating" because either they or a household member had tested positive for COVID-19 could continue to work during their quarantine period. Without the arrangements for remote working, facilitated by the previous investment in information technology, the number of appointments available in general practice would have fallen substantially, as there were periods when many doctors were unable to work from their practices. This was particularly the case earlier in the pandemic when infection rates were very high and the capacity to carry out polymerase chain reaction (PCR) antigen tests was low, resulting in many NHS workers having to isolate because of inability to obtain an antigen test.

To help cope with the demand for advice from patients with symptoms of suspected COVID-19 infection, primary care teams were supported by the NHS 111 service.⁶ This is a free to access, nationally available service whereby patients can seek medical advice either by telephone or online. The NHS 111 service has played a key role in advising patients and in limiting demands on primary care and specialist services. Legal requirements around sharing data were also changed to make it easier to share medical information between different NHS organizations. COVID-19 was also made a notifiable disease, placing a legal obligation on doctors to report cases to public health agencies to support isolation of patients and contact tracing. An online portal was also established to allow patients to book COVID-19 tests directly without going through their physician. However, although this system allowed patients to book COVID-19 PCR tests directly and thereby reduce the need for input from a general practitioner, there

were complaints from many general practitioners that they were unable to order tests for their patients and instead had to direct patients to the online portal.

Reducing regulatory requirements

To further free up the time of primary care teams, some of the regulatory requirements for general practices were relaxed. This included assessments of general practices by the Care Quality Commission, which assesses quality of NHS services, and the suspension of annual appraisals and revalidation for doctors. Rules around certifying death and completing death certificates were also modified to reduce the workload of physicians. At the same time, the income of NHS general practices has been protected to ensure they do not face financial pressures that threaten their viability. Later in the pandemic, the NHS began to reimplement some of the regulatory requirements, such as inspections of general practices by the Care Quality Commission, leading to tensions with doctors when the number of COVID-19 cases began to increase again from September 2020 onward.

Optimizing clinical care

To support the management of patients, the National Institute for Health and Care Excellence (NICE) published guidance on the management of patients with suspected COVID-19 infection in the community.⁷ There have also been tools developed for remote monitoring of patients. However, concerns remain that some patients with COVID-19 infection in the community are not being adequately monitored, leading to adverse outcomes and deaths for some patients.⁸ New guidance is now also being developed on the management of patients with “long COVID” to improve the care of people with long-term symptoms such as lethargy, breathlessness, and mental health problems following a COVID-19 infection.

The second wave

The lockdown measures introduced across England and the other countries of the UK in late March eventually led to a decline in cases, and by the summer, during the months of July and August, COVID-19 cases were at a relatively low level. Unfortunately, during September 2020, case numbers began to increase, and by October, it was clear that the UK was facing a large second wave of COVID-19 infection. Many of these cases were initially amongst students and young people, but cases then began to spread to more vulnerable groups. This led to another lockdown being introduced across England in early November. Genomic analysis of the circulating strains of SARS-CoV-2 in the UK showed that around 80% were from a strain of coronavirus that originated in Spain. This suggests that a key factor in the second wave of COVID-19 in the UK was importation of infection by UK nationals returning from holidays in Spain. The relaxation of overseas travel restrictions during the summer months and the lack of a period of quarantine after return from holiday, and without antigen testing at airports, contributed to the spread of infection across the UK. This was further compounded by a new, more infectious strain of SARS-CoV-2 that began to circulate across England in the later part

of 2020 and which soon became the predominant strain in circulation. By late December 2020 and in January 2021, the daily number of cases often exceeded 50,000, placing a major strain on testing and contact tracing service and on NHS primary care and specialist providers.

Nursing homes

One group of people who were very badly affected by the COVID-19 pandemic were people living in nursing homes (referred to as “care homes” in the UK). Currently, in the UK around 416,000 people live in nursing homes. They are generally older and frail, with high levels of multimorbidity, and also have a high prevalence of dementia. Early in the pandemic, the NHS aimed to increase bed capacity for acutely ill patients in hospitals. This led to the rapid transfer of patients from hospitals to nursing homes, often without any test for COVID-19 before discharge. Once in a nursing home, COVID-19 invariably spread quickly among the residents, leading to high levels of morbidity and mortality. Policy on testing has now changed and patients require two negative antigen tests before they can be discharged from a hospital to a nursing home. There is also now more regular testing of the residents and staff of nursing homes, but these changes were implemented too late in the pandemic to prevent a large death toll among the residents of nursing homes.

National vaccine program

With the failure of the United Kingdom to suppress COVID-19 through an effective “test, trace, and isolate” policy—in contrast to countries such as South Korea, New Zealand, and Taiwan—it became clear that the most likely way for the UK to exit the pandemic was through a vaccine program. This would rely on a safe and effective vaccine being developed, receiving approval from the pharmaceutical regulatory agency in the UK (Medicines & Healthcare Products Regulatory Agency, MHRA), and then being delivered at scale to the population of the UK. The first vaccine to come near to approval was one produced by the US company Pfizer and the German company BioNTech, which is administered as two separate doses. Later on, two additional vaccines, from AstraZeneca and Moderna, were also approved for use in the UK.

In November 2020, general practices across England received guidance on how the vaccine program would run, once regulatory approval had been obtained, with a proposed start date of early December. General practices across England were asked to work in groups and to set up vaccine clinics that would run for 12 hours per day, seven days per week to administer the 40 million doses of the Pfizer-BioNTech vaccine that had been secured by the government. The expectation was that there would be around 1,500 vaccination sites in England. Each vaccination will generate a fee of £12.58 (\$16.60) for the practice. Target groups in the first wave of the vaccination program would include people living in nursing homes, followed by people aged 80 years and over and NHS staff. The speed of implementation and scale of the vaccine program illustrates how England’s publicly funded NHS can respond to an urgent public health crisis.

Challenges

Primary care in England has faced serious challenges arising from the COVID-19 pandemic, not all of which have yet been addressed. From the perspective of patients, the online and telephone advice service, NHS 111, was initially overwhelmed by patient requests, resulting in long wait times to obtain advice and with concerning reports that some ill children may have been wrongly advised to stay at home, resulting in significant harm.⁹ Additionally, the remote consultation model for routine primary care, whilst offering safe and timely assessment for many patients, may also result in worsening health inequalities for patients who are not technologically literate, patients who have hearing impairment or mental health problems, or patients for whom English is not their first language.

The implementation of the “COVID-19 primary care hubs” has been patchy, with services slow to develop in many parts of England and a perception of a lack of clear central guidance. In some areas where hubs are operational, utilization was often relatively low, indicating that the model may not be functioning at the capacity that was planned for. This has led to the closure of some hubs and also of home visiting services, with responsibility for managing patients with suspected COVID-19 infection being passed back to general practices. Finally, guidance to cease nonessential care for patients—such as physiotherapy, radiology services, cervical screening, and spirometry—has the potential to lead to delayed diagnoses and poorer health outcomes, and exacerbate existing health disparities.¹⁰ Statistics published by NHS England, for example, show that the number of people waiting for more than one year for hospital treatment increased from 1,600 at the start of 2020 to 140,000 by September 2020, with further increases expected during the winter of 2020–2021.

Primary care staff have also not been immune to difficulties. Most notably, the quality and availability of PPE was an issue particularly in the earlier part of the epidemic, endangering staff health and potentially reducing the quality of care for patients.¹¹ Many general practitioners have died from COVID-19 infection in England, and this has further exacerbated concerns about PPE in primary care. Testing for staff who are self-isolating with symptoms of COVID-19 has been difficult to access, meaning that staff who feel well enough to attend work must stay at home due to mild symptoms that may not be COVID-19. This is now being addressed through an expansion in testing capacity for acute COVID-19 infection, as well as by supplying rapid testing (lateral flow) kits to primary care staff for self-testing twice weekly. However, testing capacity remains limited in England, as does contact tracing, both of which are core elements of global strategies to control COVID-19.¹² Finally, the leadership of the COVID-19 response in the UK was very fragmented with, for example, many different government agencies involved and different public health policies in place in the four countries of the UK (England, Wales, Scotland, Northern Ireland) because of the devolved nature of our government.¹³

Conclusions

We have seen rapid changes in primary care in England in response to the COVID-19 pandemic; but challenges remain, particularly if the number of people with COVID-19 infection increases rapidly and starts to overwhelm the health system during the current second wave, or if subsequent waves of infection occur.¹⁴ Other challenges include providing medical care for people who are self-isolating at home because of their age or because of underlying medical problems that increase their risk of complications and death if they contract a COVID-19 infection. There are also problems that will arise from the cutting back of many specialist hospital services, which will have negative effects on health outcomes if restrictions in health services remain in place for a prolonged period. This will particularly be the case for people from poorer communities.

Overall, primary care in England has responded well to the COVID-19 pandemic, making radical changes to how primary care services are delivered in a very short period of time. Key to allowing this to happen is the commitment by the UK government to support general practices financially to prevent the loss of income that has occurred to primary care practices in countries such as the USA. However, the future will remain challenging for primary care teams in England until such time as a vaccine can be administered on a sufficient scale to finally bring COVID-19 under control and allow for a return to a more normal society.¹⁵

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What We Can Learn from European Experiences of Primary Care Under COVID-19

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Although a global pandemic caused by a respiratory virus was highly predictable, outside the countries of South and East Asia that had recent experience of SARS, few countries were prepared for the worldwide spread, in 2020, of the SARS-CoV-2 virus. The first identified cases of COVID-19 in Europe occurred in northern Italy, brought by a traveler from China.¹ Within weeks, television screens across the world were filled with pictures of hospitals in Italy struggling to cope while the graphs of cases and, soon after, deaths rose rapidly. In health ministries across Europe there was a growing sense of panic. But what were they to do? Although, as the editor of *The Lancet* has pointed out, Chinese scientists had been publishing warnings and sharing their experiences in the pages of this journal, few seemed to have noticed and, if they did, they were unable to act quickly enough.

The first problem was a lack of understanding about how the virus was transmitted. Many European scientific advisers, trapped within a mindset shaped by the experience of pandemic influenza, found it difficult to adjust to a different threat. The initial advice focused on spread by droplets and fomites, with the resulting advice focusing on handwashing, deep cleaning of facilities where cases have occurred, and social distancing. It took quite some time to incorporate the evidence emerging from Asia on the role of aerosol transmission, especially in the absence of symptoms and, in particular, the importance of face coverings to reduce transmission.

The second problem in many European countries was a failure to act early. In some cases, this was due to a reluctance to take measures on the scale seen in China to reduce population mixing, in part because of the unspoken assumption that such measures would not command widespread public acceptance in what they considered was a very different political and social situation in Europe. In some countries, such as the United Kingdom and Spain, it also reflected weaknesses in the political process, in the former case, because the prime minister was distracted by its attempts to leave the European Union and his personal problems² and in the second because of tensions between the central government and the regions. The result was that infections spread rapidly, with mixing in ski resorts playing a major role as returning vacationers seeded infections across much of Western Europe. Countries in central Europe had, however, reacted quickly, perhaps because the

memory of severe outbreaks of infectious diseases such as tuberculosis (TB) persisted more strongly in their public health systems but also likely because they experienced fewer imported cases initially. As a consequence, they were relatively spared in the first wave.

Inevitably, health services have been on the front line of the response to the pandemic in all European countries. However, the focus has been very much on the hospital sector. Initially, and again reflecting the misunderstanding of the nature of this new disease, COVID-19 was seen as another viral pneumonia. Those getting hospitals ready focused on the provision of ventilators and personal protective equipment (PPE) for hospital workers. Only later did it become clear that this was a complex multisystem disease requiring the input of many specialties.³ By this time, however, almost all countries had imposed severe restrictions on movement, closing down public transport and all but essential services. This also meant stoppages of nonurgent health care, including primary care, and limited availability of services for patients with milder presentations of COVID-19. Later it was recognized that this virus was being transmitted primarily in settings where large numbers of people were mixing, in close proximity, for prolonged periods of time. Obviously, this included hospitality venues, such as bars and restaurants, but also care homes and, potentially, waiting rooms in primary care facilities that attracted people who were ill, at least some of whom would be likely to be spreading the virus, even if not showing symptoms of COVID-19, in areas where the prevalence was high.

The consequences were predictable. First, people who became ill, whether with COVID-19 or something else, found themselves unable to access care (in primary care or hospital settings) and, even if they could, many were reluctant to expose themselves to the risk of infection. The increasing numbers of health workers who were becoming infected, sometimes requiring hospital admission and, in some cases, dying,⁴ served as a daily reminder of the risks involved. Second, those providing health care had to find new ways of meeting the needs of those requiring care. Primary care providers did this in two ways: by segregating the pathways taken by patients suspected of having COVID-19 from those with other conditions, and by introducing remote consultations.

The first of these approaches, having separate pathways, was already being used in many Asian countries, with health facilities redesigned in the aftermath of SARS. However, it was more difficult to do in Europe, given the impossibility of undertaking major construction in the midst of a pandemic, requiring many to separate patients with symptoms of COVID-19 by either time or space. For example, in Bulgaria an ordinance from the Ministry of Health mandated that on Tuesdays and Thursdays GPs could provide only maternal and child consultations and compulsory vaccinations without admitting other patients.

The second approach, remote consultations, should have been much easier. In the preceding years, there had been enormous advances in online platforms. In other sectors of society, individuals and organizations had made the transition to online meetings, using software such as Zoom, Skype, FaceTime, or Teams, with relative ease. Over a relatively short period of time a new online etiquette developed and, although not without its problems, this new way of working was soon accepted as having many advantages, not least the ability to avoid time-consuming and often uncomfortable journeys to meetings.

However, there was much more reluctance to embrace these new approaches in the delivery of health care and, in many countries, the vast majority of patient contacts were conducted face-to-face prior to the pandemic. There were a number of reasons. First, there was a sense that they could not replace the physical interaction between health professional and patient, even in consultations where no examination was required. Second, especially in health systems based on a fee-for-service model, there were questions about how health workers would be remunerated.

In the remainder of this chapter, we will review what is known about changes in utilization of primary care in Europe and how providers of primary care have adapted to the new situation, drawing extensively on the European Observatory's COVID-19 Health System Response Monitor.⁵ We conclude by looking to the future, asking which of these adaptations are likely to continue after the pandemic is over, and what the implications for primary care services are of a growing number of people who have experienced persisting symptoms following infection, suffering from what is now termed long COVID.

Impact on consultations

Although there are widespread reports of declines in utilization of primary care in European countries since the beginning of the pandemic, there is little evidence to quantify its scale. This is in contrast with the growing number of studies that have looked at reductions in, for example, admissions with acute coronary syndrome,⁶⁻⁹ access to cancer services,¹⁰ and emergency department attendances.^{11,12} Moreover, those published reports on changes in primary care are predominantly from one country, the United Kingdom. One study, undertaken in a single general practice in England, reported a reduction of 92.5% in face-to-face consultations in the two weeks before and two weeks after national guidance was issued to reduce these consultations. The number of telephone consultations increased by 85.6% in the same period. The proportion of people living in the most deprived areas who consulted before and after the change did not differ.¹³ Among 47 general practices in a deprived part of northern England, between 16% and 50% reported a reduction in primary care consultations for circulatory disease, common mental health problems, type II diabetes, and cancer between March and May 2020 compared to what would have been expected based on data over the preceding decade.¹⁴

Another study, in the Oxford region of England, examined consultations by patients aged 65 years and over between February and May 2020.¹⁵ The rate of telephone and video consultations increased by just over 100%, while face-to-face consultations fell by 65% and home visits by 63%. Among those consulting, whether face-to-face or remotely, a much higher proportion of the total comprised those taking 10 or more medicines, or with high levels of frailty. As in the study from northern England, the change was extremely abrupt, coinciding with the changing national guidance. The most extensive study analyzed records of almost 10 million individuals participating in the English Clinical Practice Research Datalink database. It found dramatic reductions in primary care contacts for all conditions after the introduction of restrictions on movement. By July 2020, none, except for unstable angina and acute

alcohol-related events, had recovered to the previous level. The largest reductions were the contacts for diabetic emergencies, depression, and self-harm, all of which fell by 50% or more.¹⁶

The few studies from other parts of Europe paint a similar picture. A study of attendances at Belgian primary care out-of-hours centers reported an initial increase in attendances followed by a dramatic decline. However, while there were no telephone consultations in previous years, in 2020 these comprised 40% of the total.¹⁷ In France, a similar decline was noted during the first wave, with 80% fewer visits to dentists, 40% fewer visits to physiotherapists and midwives, and 30% fewer to general practitioners.⁵ A look at Finnish data from the spring of 2020 also showed that visits to child health and maternity care clinics decreased by between 10% and 40%, while school health care visits fell by 60% to 80% compared to the previous year. The Finnish permanent secretary of the Ministry of Social Affairs and Health stated on April 28, 2020, that “what is more worrying than the adequacy of intensive care capacity at the moment is the ability of our health care and social welfare system to respond to service needs other than those associated with the Coronavirus.”⁵

Impact on health

The initial fall in primary care consultations also had wider health system impacts, leaving around 2.1 million people in the UK waiting for cancer-screening tests in June 2020, with urgent referrals dropping to around 25% of usual levels in England at the start of the pandemic.¹⁸ Similarly, in April 2020 there were 10,792 patients who had been urgently referred to cancer services but were still awaiting treatment, compared with 13,147 in April 2019.¹⁹ Over three weeks in May, the World Health Organization conducted surveys in 155 countries and reported that COVID-19 had dramatically curtailed the provision of health services for non-communicable diseases, noting a 25% drop in new cancer diagnoses in the Netherlands since the pandemic lockdown began.²⁰

Childhood vaccination uptake was also affected, with measles, mumps, and rubella vaccine uptake falling by 20% during the first three weeks of the lockdown in England.²¹ Though these are now believed to have returned to prepandemic levels, a similar pattern was observed in other European countries, such as Finland, where it was attributed to the reduction in services during lockdown and a reluctance among parents to vaccinate.⁵

Meanwhile, despite fewer patients presenting to primary care for self-harm, one in five people reported experiencing thoughts of suicide or self-harm in the first months of lockdown, with one in twenty actually harming themselves, according to a representative survey of nearly 45,000 adults in the UK.²² Most recently, the ambulance service in London reported an increase in the number of suicides and attempted suicides they attended at the end of October compared to previous years.²³

While it is too early as yet to decipher the long-term impacts of the pandemic on health, quality of life, or health care costs, Finland has led by example by commissioning an impact assessment of the effects of the fall in primary health care access.⁵

Responding to the pandemic

In many European countries, the COVID-19 response has focused on the public health operations of testing and tracing, and on the response within hospitals. In some countries, such as the United Kingdom, primary care was bypassed in the initial response,²⁴ as was the existing public health service in local government, although in others, such as France, existing primary care providers played an important role in facilitating testing. Indeed, patients who experienced COVID-19 symptoms were instructed not to attend primary care centers and to manage their care at home unless their health deteriorated. Instead, the government contracted with a number of large outsourcing corporations who set up their own testing operations. General practitioners were not even able to order COVID-19 tests. As with many of these outsourcing exercises over the past decade, these have been spectacular failures. But, once the contracts are set, it is difficult to change them, especially as they lack any effective penalty clauses. In some countries despite a long-standing emphasis on strengthening primary care, primary care providers were not the first point of contact for suspected COVID-19 cases.

Conversely, in some European countries, such as Albania, Armenia, Bulgaria, Croatia, the Czech Republic, and Germany (to name a few), primary care was the first point of contact, responsible for assessing patients with symptoms and ordering and interpreting tests, with many also involved in ongoing patient surveillance and, when necessary, facilitating admission to hospital and subsequent convalescence.⁵ This is of course not without capacity constraints, and primary care services in France conducted about 42,000 consultations for suspected COVID-19 in week 12 of 2020 alone⁵; primary care staff were also actively involved in contact tracing in some countries, such as Belgium, France, and Ukraine.⁵ To avoid overburdening primary care, many countries, such as Belgium, the Czech Republic, Finland, Denmark, and the UK, also set up telephone hotlines for the general public to access the latest guidance and in some cases order tests. Embracing technology, Bulgaria also introduced a chatbot, while Estonia introduced robotic contact tracers to call contacts of COVID-19 cases.⁵

With growing fears of a “twin-demic,” many countries also stepped up their efforts to promote influenza vaccinations ahead of the second wave of COVID-19, adding pressure to primary care to see more patients face-to-face. In Germany and Ireland, for example, additional funding has been allocated to primary care for this purpose, with the United Kingdom also expanding the eligibility criteria and funding vaccinations to all those over the age of 50.

Adaptations to COVID-19

In the early days of the pandemic, primary care providers in some countries looked for ways to keep people with possible COVID-19 separate from others. In England, for example, some general practices established what were termed “hot hubs,” single designated areas or surgery to manage patients with suspected or confirmed COVID-19, with staff wearing full PPE.²⁵ Similar adaptations were made in Greece and Germany⁵ as well as triage centers in Belgium, where groups of general practitioners came together to create “corona centres.”²⁶ Another innovation was the creation of ambulatory care pathways in Germany, where over 85% of

COVID-19 cases were seen in ambulatory settings, which included fever ambulances, staffed with medical students to follow up COVID-19 patients in the community. This shift toward community-centered care as a means to decrease nosocomial contagion has been seen previously for TB and is becoming increasingly popular in other countries, including Italy²⁷ and now the UK,²⁸ with the imminent rollout of the NHS health at home service, including remote pulse oximetry. Other countries, such as Croatia, shifted toward more primary care visits at home, provided the household had not been exposed to COVID-19.

Remote consultations also became increasingly common—for example, in Greece, Hungary, Ireland, France, and particularly Estonia, where the share of remote consultations rose 1.8 times in March compared to February.⁵ This shift in the locus of care in some countries required changes in the way providers were paid. A number of countries, like Denmark and Estonia, introduced higher fees for remote consultations and/or loosened restrictions on reimbursing such consultations (the Czech Republic, Germany, Luxembourg, the Netherlands, Sweden, Switzerland). The intention was to both incentivize care and shore up provider incomes, since some experienced significant declines in revenues due to changes to the volume of face-to-face care. In England, GPs were reimbursed for improving their IT capacity.

Particularly valuable insights can be obtained from a qualitative study of general practitioners in Belgium, conducted by medical students who were unable to complete their internship as normal.²⁶ They identified six themes.

The first theme related to changes in the management of patients. General practitioners described how primary contact with patients was now by telephone. Anyone with respiratory symptoms was referred to the triage centers mentioned earlier. There were mixed views about the impact on workload. The general practitioners reported seeing fewer patients but having a greater administrative workload. They also described how their workload had become more structured, with a greater division of tasks among the primary care teams. Nurses, in particular, had taken on a greater role in triage. Importantly, in a health system that had been characterized by individual practices working separately, there was much greater collaboration, including pooling of resources. These changes were facilitated by the health insurance fund agreeing to reimburse telephone consultations, something that was not possible previously. Some also changed the way that income within the practices was distributed, pooling the fee-for-service payments among the general practitioners and redistributing them according to the number of shifts worked. They also reported easier access to specialist advice as hospital doctors were no longer spending time in outpatient clinics.

A second theme related to person-centered care. General practitioners highlighted the constraint imposed by the loss of nonverbal cues during remote consultations, as well as communication difficulties in different languages and across cultures. However, problems also arose as a result of the constraints imposed by wearing PPE, including the difficulty of showing empathy during such consultations. They reported their consultations were much easier with patients with whom they were familiar.

The third theme related to their problem-solving ability, with a range of problems intervening. These included the difficulty of undertaking simple physical examinations, such as pulse

rates, reduced access to specialized diagnosis, and delays in diagnosis as a result of reduced attendance by patients.

The fourth related to the reduction in some aspects of care. These included care for people living in nursing homes, which had been taken over by a dedicated physician rather than the general practitioners who had previously continued to care for their patients before their admissions, as well as cancer screening, which had been suspended.

The fifth related to the traditional role of Belgian general practitioners in certifying sickness absence. As they could no longer examine patients, they felt that they were acting as, in effect, a rubber stamp.

The final theme related to concerns about the wider socioeconomic impact of COVID-19 in their own ability to protect themselves in a situation where they faced shortages of PPE.

There is another important way in which primary care is likely to change. It is now apparent that many people who have been infected with SARS-CoV-2 continue to have symptoms. Although it is difficult to know how long this will persist, there is enough evidence that there may be a substantial number of people affected. Many are likely to require primary care into the future. The condition, referred to as long COVID, may affect up to 10% of those who have been infected. One recent study suggested that there are two broad symptom complexes, one characterized by fatigue, headaches, and respiratory symptoms, and another that adds multi-system involvement, including of the cardiovascular, neurological, and renal systems.³

Greenhalgh and colleagues have assembled the available evidence to produce guidance for the management of this condition in primary care.²⁹ They note that many patients recover spontaneously, although slowly, with support, rest, and a gradual increase in activity. However, they recommend specialist assessment if there is concern about lung, heart, or neurological symptoms that are new, persistent, or progressive. Laboratory investigations are primarily to exclude other disorders that may be giving rise to the symptoms or to assess inflammatory and prothrombotic states. Otherwise, treatment is largely directed at relief of symptoms. They stress the importance of paying attention to the patient's mental health, including advice on support in the community, as well as their social and financial situation.

Looking beyond the pandemic

As the preceding sections have shown, the day-to-day work of primary care has changed remarkably in many countries. In some ways, this has had a clear adverse impact on the quality of care. Thus, the decline in attendance is storing up many problems for the future, with delayed diagnoses and failure to identify progression and complications of chronic diseases. Remote consultations preclude many of the human interactions, including demonstration of empathy, that serve to build trust between patients and health professionals. On the other hand, both rural consultations and increased use of online services, such as ordering of electronic prescriptions, are consistent with how people increasingly live their lives, with in-person work meetings taking place by video conference and shopping online. For many busy people, an alternative to traveling to a surgery to spend time in a crowded waiting room

for a five-minute appointment will happily be consigned to history. Many have argued that these changes should have taken place long ago, but their efforts have foundered in the face of professional opposition. COVID-19 has changed this, although some patients have been angered at the reduced access to face-to-face appointments.³⁰ It is futile to argue against the virus. Prediction is always difficult, but it does seem very unlikely that the model of primary care that existed until now will remain unchanged in the future.

Although the evidence is limited (itself a sad commentary on the capacity for research in primary care), in many European countries, it is clear that primary care providers played little direct role in the response to the pandemic. This should not distract from the major achievements in transforming their mode of practice. However, it does represent a missed opportunity. If they are to play a greater role in the future, there are a number of measures that could be taken.

First, testing should be made accessible to general practitioners for patients presenting with symptoms of COVID-19. Ideally, these should be rapid point-of-care tests to facilitate rapid triage in the community.

Second, to facilitate early access to care, general practitioners require timely access to and funding for adequate and effective PPE. Determining who is responsible for the allocation of PPE in primary care (e.g., whether it is the providers themselves or local decision makers) can have important consequences for whether there is sufficient availability where it is most needed.

Third, although remote consultations have increased, 57% are still conducted face-to-face in the UK,³¹ where more than half of general practitioners also report that they now see more patients for longer each day, resulting in increased exhaustion,³² highlighting the need to train and recruit additional staff to cope with future need. A high priority will be to ensure that disadvantaged and vulnerable groups with less access to and familiarity with technology will not face barriers to accessing primary care going forward as shifts to telemedicine become the new normal.

Fourth, there is a need to ensure that flexible payment structures are in place to ensure that general practitioners can provide universal access to care to all communities, including the most vulnerable in long-term care. While flexible payment structures have been implemented in many European countries, including Belgium, Croatia, the Czech Republic, Denmark, and France, it was by no means universal.

Fifth, structural changes will be required to facilitate regular cleaning, to account for the need for separate entrances for infected patients, and to incorporate telemedicine in its broader sense—including, for example, Bluetooth-assisted stethoscopes and ECGs—into routine practice.

Finally, the events of the past year have highlighted the importance of data sharing, and it is crucial that any future system is built on a robust system of transparent data that is shared quickly between primary and secondary care and public health professionals.

Conclusions

The COVID-19 pandemic has revealed opportunities to transform primary care services across Europe, but has also created many new and unprecedented challenges, which require careful planning. It is clear that focused catch-up programs will be required to resume routine vaccinations, cancer screening, and urgent referral and treatment programs to their previous levels. Although a number of solutions have already been identified, including the expansion of remote consultations, it is also clear that this is not a panacea and structural changes will be required in the future to strengthen resilience in primary health care, including workforce expansion, reinforced infrastructure, and data connectivity.

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COVID-19 and Primary Care for Incarcerated People Released to the Community

Lisa Puglisi, Taylor Weinau, and Emily A. Wang

Despite the fact that the incarceration rate is the lowest it has been in the past 20 years, the United States is still a nation that leads in jailing its citizens.¹ Currently, 2.2 million individuals are incarcerated in jails (which house those awaiting adjudication of crimes or serving sentences of less than a year) or prisons (housing those serving sentences greater than a year).² Arrest and incarceration as forms of punishment and social control have been used to such a large extent that an estimated one-quarter of adults in the country have been arrested.³ Racial and ethnic disparities in incarceration rates are stark, reflecting systemic racist policies across the criminal legal system spectrum. Black and Hispanic men, especially the young and non-college educated, are incarcerated at approximately six- and two-fold increased rates, respectively, compared to their white counterparts.⁴

Incarcerated people have high rates of chronic health conditions, with high prevalence of communicable diseases (e.g., HIV, hepatitis C, syphilis), noncommunicable diseases (e.g., hypertension, cancers, asthma), and mental health and substance use disorders.⁵ For example, at least 10% of incarcerated people are infected with hepatitis C, a prevalence rate that is at least 10 times higher than that of the general population.⁶

Ultimately, health issues that people who are incarcerated face become issues that impact the community health system, as 95% of incarcerated people are released back into the community at some point.⁷ Upon release, people face serious barriers in caring for themselves, including difficulties finding housing and employment and accessing primary care. Insurance coverage remains a significant issue, even in the 39 states that expanded Medicaid services by 2020 as part of the Affordable Care Act (ACA),⁸ though a growing number of states do enroll certain people in Medicaid upon incarceration or suspend their coverage, as opposed to terminating the benefit, which is the default in most states.⁹

These obstacles, along with siloed correctional and community health systems that lead to poorly coordinated transitions of care, are thought to be some of the driving factors behind the high risk of death, hospitalization, and worsening health outcomes (e.g., increasing HIV viral load, relapse to substance use, overdose, and worsening of cardiovascular disease risk factors) following release.¹⁰

And in many ways, meeting basic needs after coming home from correctional systems has become much harder in the time of COVID-19. In this chapter, we describe the state of COVID-19 and primary care in correctional facilities, decarceration protocols related to the pandemic, and health care and public health systems' adaptations related to COVID-19 for those affected by incarceration. We end with conclusions about how the primary care system can support the urgent need for decarceration during COVID-19.

COVID-19 in correctional facilities

Correctional facilities in the United States have been uniquely and profoundly impacted by the COVID-19 pandemic, given long-standing vulnerabilities to infectious disease outbreaks.¹¹ As early as March 2020, Riker's Island jail in New York City and Cook County jail in Chicago reported large-scale outbreaks affecting both incarcerated people and correctional staff at rates that outpaced local community rates.¹² During the initial period of a large outbreak in an urban jail, the disease dynamics were such that one COVID-19 infection of a staff or incarcerated person would lead to eight others being infected.¹³ According to the COVID Prison Project, by August 2020, 90 of the largest 100 cluster outbreaks in the United States had occurred in correctional facilities.¹⁴

Many features of the criminal legal system at large and the physical structure and function of correctional facilities, in particular, have contributed to this elevated risk, including high throughput and brief stays for jail populations, facility overcrowding, and the built communal environment and old infrastructure.¹⁵ At least a quarter of correctional facilities are estimated to be over capacity, and this does not account for those with congregate living quarters or eating facilities. Further, the aging prison population (over 55 years old), which has grown by 289% in the past two decades, has a disproportionate burden of chronic medical conditions, which are risk factors for COVID-19. The COVID-19 pandemic, then, becomes additive to the normative burden of ailments in incarcerated people, and this can result in strains on the correctional health workforce and challenges to correctional health care systems that have been largely excluded from the public health and preparedness planning infrastructure and oversight.

Recommendations from national and local public health agencies have not comprehensively addressed the unique needs of the correctional systems. For example, on March 30, 2020, the Centers for Disease Control and Prevention (CDC) provided general recommendations for correctional and detention centers, including guidance on masking, sanitation supplies, and implementing social distancing in facilities (such as sleeping head to toe in double-occupancy cells).¹⁶ While correctional facilities worked to implement this guidance, there were many efforts led by correctional leaders, court systems, and advocacy organizations to do more, acknowledging the uniquely high risk for large-scale outbreaks in these facilities. These measures included finding space for medical isolation units, mass testing programs, cohorting efforts to protect the most vulnerable, and, in some places, large-scale efforts to decarcerate correctional facilities.¹⁵

The state of decarceration during COVID-19

Decarceration refers to any process that reduces the number of people in correctional facilities, including diverting those who might otherwise be incarcerated (such as by granting a promise to appear for a hearing instead of bail) and by offering early release to presently incarcerated people. During the COVID-19 pandemic, decarceration has served as a mitigation effort for COVID-19 transmission within certain facilities. Decarceration has been shown to be a disease mitigation strategy that, in addition to following routine CDC mitigation strategy guidance, can reduce the epidemic potential of SARS-CoV-2 in a correctional facility and prevent the impact of an outbreak.¹³ Furthermore, there is consistent evidence from a number of states showing reduction of incarcerated populations does not result in an increase of serious crime.¹⁵

Since the pandemic began, there have been decreases in prison and jail populations. Between January and August 2020, jail populations decreased by 22%, but state prison populations decreased by only 4%, and Federal Bureau of Prisons populations by 10%.² Prisons have been difficult to decarcerate given legal barriers to “compassionate release,” which is a legal provision that varies by state but typically allows people with terminal illnesses, such as metastatic cancer and end-stage heart failure, to be released before their sentences have been served. Consideration for compassionate release often hinges on documentation of prognosis by a licensed physician that the person has six months or less to live. This is despite evidence that physicians tend toward overestimating survival even in terminally ill patients¹⁷ and that severely impaired function in activities of daily living and frailty are better indicators of profound disability. Rarely used before the pandemic, compassionate release has been ineffective for distancing the most medically vulnerable people in prison from the risks of COVID-19 even in the Federal Bureau of Prisons, where updated guidance on compassionate release from the United States Sentencing Commission is broadest.¹⁸

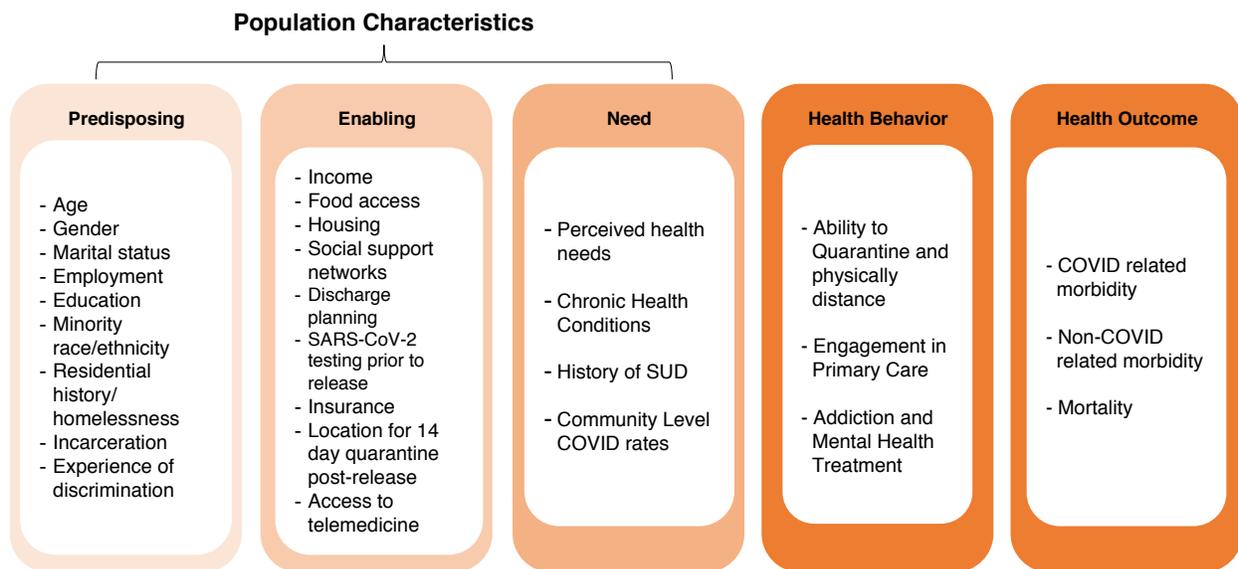
One critical part of compassionate release planning is identifying community health services for these frail adults, such as a dialysis center for a person with end-stage renal disease. Consequently, while it remains important to focus on increasing decarceration processes in an active and ongoing manner to prevent the impact of future waves of COVID-19, further efforts on the community health side are needed as well to facilitate the discharge planning and coordination of care to address the significant health needs of people returning to the community after release from correctional systems.

Peri-release primary care for incarcerated individuals

R.D. is a 43-year-old gentleman who was incarcerated for eight years and was in good health upon his incarceration. While incarcerated, he developed a nonischemic cardiomyopathy, which was complicated by an episode of sudden cardiac death, after which he was started on antiarrhythmic medications and received placement of a biventricular automated implantable cardiac defibrillator. He resided in the prison infirmary for more than a year before he was released during the COVID-19 pandemic on compassionate release. He was sponsored for release by his elderly father, and when he returned home, he had no phone, no source of income, and no experience navigating health care in the community.

People who are released from correctional facilities have intertwined health and social needs, which present significant barriers to engaging in primary care, especially given the impact of factors unique to the COVID-19 pandemic. In the Behavioral Model for Vulnerable Populations,²⁰ which we have adapted to reflect the impact of COVID-19 on health behaviors of people who are released from incarceration (Figure 1),¹⁸⁻²⁰ the predisposing, enabling, and need factors predict engagement in primary care, which, in turn, predicts health outcomes. Individuals released from correctional facilities have many predisposing factors, including minority race (which reflects their exposure to interpersonal, institutional, and structural racism), high rates of discrimination, and criminal justice system contact. They have limited access to stable housing and food. A majority of incarcerated people have at least one chronic health condition, and it is estimated that approximately 40% of individuals are newly diagnosed with a chronic health condition while incarcerated.²⁰ These individuals learn to manage their new diagnoses within the context of correctional health care, where they rely on correctional officers and health professionals to administer care and medications, as well as monitor daily adherence.²¹ This is in a population with generally low levels of health literacy²² and where self-efficacy, defined as the willingness and the ability of people to engage in various preventive and disease management behaviors, is discouraged because it runs counter to notions of safety and security. For instance, incarcerated people typically do not have access to glucometers and cannot draw up their own insulin, given concerns about safety of having needles behind bars. Additionally, many current and formerly incarcerated individuals have never received or navigated treatment from community-based health systems and have little to no experience utilizing pharmacy or health insurance services.

Figure 1. The Behavioral Model for Vulnerable Populations Adapted to Reflect the Impact of COVID-19 on Health Behaviors of People with COVID-19-related Substance Use Disorder From Incarceration



Data derived from Gelberg, Andersen, and Leake.²⁰

An additional challenge to transitioning back to the community for people with a chronic health condition is that discharge planning in correctional facilities is detached from community health systems. Most prisons have a standard basic approach to discharge planning for these individuals. This may include a limited supply of medications (up to 30 days' worth) and questions about where the individual will live upon release. Meanwhile, jails less commonly have a formalized discharge plan focused on housing or health concerns due to the shorter lengths of custody and unknown release date. In both prisons and jails, individuals are scarcely provided their medical records, and if so, incarcerated people usually are required to pay for their records. The exception to this is unique coordination-of-care programs for people with certain health conditions such as HIV²²⁻²⁵ or hepatitis C.²⁶

Because correctional facilities rarely refer people to community health care systems upon release, incarcerated people face substantial barriers to engaging in primary care and chronic condition management after release. As we noted earlier, health care is not a primary priority when individuals are released. Most people's first priorities are access to food, finding somewhere to live, obtaining employment, reconnecting with family, and meeting the myriad stipulations of probation or parole. As a result, health issues often receive less priority, and people can be forced to make "trade-off decisions" that put their health at risk. Ninety percent of individuals with a chronic health condition released from correctional facilities are housing insecure or homeless. Many are without any access to food or employment prospects, and they do not have identification to get state and federal benefits.²⁷ With these barriers in mind, in addition to the lack of transition planning and community care coordination, people released from incarceration face disproportionately limited access to primary care.²⁸

One additional reason for low primary care engagement is discrimination within the primary care system. For example, one audit study in Ontario, Canada, found that individuals who disclosed a history of incarceration while seeking to establish primary care were half as likely to be offered a new visit appointment.²⁹ This disparity of obtaining appointments for primary care may contribute to poor health outcomes, such as higher rates of hospitalizations, inadequate mental health and substance use disorder treatment,³⁰ and high rates of opioid-involved overdose, and warrants further study.

Strategies to address COVID-19 in primary care for incarceration-affected populations

R.D. was referred to a primary care clinic but was not provided an appointment date because of his rapid release. He was provided with vouchers for his necessary medications but had never before used a pharmacy to fill a prescription and was uncertain as to how to obtain refills when his 30-day supply ran out.

Discharge planning and improving access to primary care

Effective discharge planning during COVID-19 has required additional considerations beyond medications and referral appointments. First, given the high risk of viral transmission in

correctional facilities, people like R.D. being released may pose a risk to their immediate family and to the community in which they are released. From a public health standpoint, COVID-19 testing must therefore be considered in all reentry planning. This risk is even more elevated for people who lack community supports upon their release and have limited access to noncongregate housing, food, and essential needs, particularly when community rates of COVID-19 are high. Further, people released from jail or prison should be discharged with comprehensive education about the virus and a connection to community-based health services for testing and expectant management should they become infected, particularly if they have a chronic health condition or have lingering COVID-19 symptoms. Given high rates of asymptomatic COVID-19 infection in general and high numbers of correctional outbreaks, testing prior to discharge with quick return of results would reduce the risk of viral spread. Moreover, given false negatives and real-world implementation complications encountered with COVID-19 testing, a possible synergistic strategy, in collaboration with community-based organizations and departments of public health, could be providing individuals returning to congregate or crowded settings a safer and more isolated place in the community to complete a 14-day quarantine. One example of this is arranging a subsidized hotel room for the released individual.

Second, discharge planning from corrections should include increased medication supply (at least a 90-day supply), acknowledging the active strain on pharmacies operating safely during the pandemic and on people leaving their homes during community shutdowns to obtain medications. This approach has been increasing in community medicine over the past decade, has been associated with increased medication adherence,³¹ and expands on prior recommendations from the Urban Institute, which recommended 45 days' worth of medications, acknowledging that turning on medical benefits took an average of 45 days.³² Adequate medication supply and a direct connection to community primary care are essential prior to release, as engagement in primary care has been shown to reduce reliance on emergency departments for ambulatory care needs¹⁹ and lower rates of other acute care utilization after release.²¹ Prior to the pandemic, some prisons and jails were piloting programs aimed to educate people on management of their chronic diseases in the community. This education includes obtaining medication refills and using insulin for the first time.³³ Continuing such programs may reduce unnecessary burden on the community system during the pandemic.

Last, as the majority of health systems work to expand telemedicine during the pandemic, correctional health partners and discharge planners should consider increasing the use of telemedicine for discharge planning. This may include establishing video visits with community-based social service providers to address social determinants of health, such as housing and food access, and community medical providers, including community health workers, to help establish more of a connection to the community health system before release. Making community health connections before release has been found in past interventions to be helpful,³⁴ and during the time of COVID-19 where visits are restricted in many correctional facilities, telemedicine expansion provides an avenue to more consistently offer connection to community providers.

Community health system adaptations to improve health behaviors

R.D. was brought into community care after his cousin referred him. He was seen in person because he did not have a phone he could use. He did not have identification, but the health care system created a new policy enabling those without ID to still be seen. He did not have insurance, but enrollment was initiated by a social worker at his first visit. A community health worker connected him to resources to get a phone, as well as resources for food and housing. His elderly father has stayed safe at home.

COVID-19 has created significant tension on outpatient and inpatient services within community settings. Many primary care and behavioral health care providers have put a momentary pause on new appointments during the pandemic, and many have shifted to providing most care via telemedicine. Access to primary care, substance use treatment, and mental health care during the pandemic may be aided by community health systems partnering with programs that can provide patients with access to phones with video capabilities, especially in situations where correctional systems have not provided them with these tools. Video communication is linked with increased patient understanding and satisfaction when compared with telephone consultation.³⁵ This is essential when considering primary care and substance use and mental health care, since longitudinal relationships and clear communication are indispensable to successful care management. It is important to note, with regard to substance use treatment, that the U.S. Drug Enforcement Agency issued new guidance due to the pandemic that advised programs could prescribe buprenorphine via telehealth and loosened the allotment of days for take-home medications for methadone,³⁶ in turn reducing in-person visits. Enabling recently released patients with this technology could eliminate barriers to this essential care, which is all the more critical given high rates of drug overdose after release from correctional facilities and the increased community rates of overdose during the pandemic.

As many community health centers turn to telemedicine to protect patients and staff, they must acknowledge that this will not be the appropriate approach for all patients. Blanket shutdowns of in-person visits simply will harm some patients, and the community health system must be tasked with finding ways to identify people who need face-to-face visits. Using the patient example provided in the previous section, for a person who has never used the community health system, has never filled a prescription or used a smartphone, and has a physical health condition such as congestive heart failure that often requires physical exam assessment, telemedicine appointments are simply insufficient to provide proper care to the patient. Triaging the clinical needs of patients, while also factoring in health literacy and social needs of patients, is also part of primary care medicine and would be included in initial in-person visits for people recently released from prison and jail.

Another evidence-based intervention to engage recently released individuals in primary care is specially tailoring primary care for people just returning home from corrections, as is done in the Transitions Clinic Network (TCN). TCN is a national consortium of more than 40 primary care-based programs that serves the needs of individuals returning from incarceration through interdisciplinary teams with community health workers with personal histories of incarceration.²¹ In a randomized controlled trial, participants in the TCN program in San

Francisco had 51% fewer visits to the emergency department in a year compared with those who were assigned to receive expedited primary care in safety-net systems.³⁷ TCN participation also impacts future criminal justice contact and is associated with lower rates of returning to prison for a parole or probation technical violation and fewer incarceration days compared with the control group.³⁸

In March 2020, in response to the rising pandemic concerns, some community health systems collaborated with state prison systems to implement broad-scale innovation in coordination of care. Three such examples include systems that were designed in California, North Carolina, and Connecticut as part of statewide TCN programs. Based on input and perceived need from the departments of corrections, these statewide networks rapidly established easy ways for correctional systems to refer anyone being released who had a chronic health condition. The networks took on the responsibility of linking those individuals with primary care appointments in the communities to which they would return (even if there was not a TCN program in that community), and connecting these individuals with a community health worker who had a shared history of incarceration to help address some of the other stressors and social needs associated with being rapidly released from incarceration. They facilitated collaborations with state prison systems and local jails and community health care systems so that people released from incarceration could receive an array of services to include expedited primary care appointments, as well as in some locations phones upon release, and connections to rapid rehousing. Each TCN statewide program took a different approach, but they all involved creation of new communication systems, such as a hotline or HIPAA-compliant online referral platform, as well as systems to share medical information with consent that allowed for more individualized planning before release.

Health insurance adaptations for improved health outcomes

Critical to accessing COVID-19 testing and treatment, primary care, and addiction treatment upon release is health insurance. The Medicaid Inmate Exclusion Policy, which under the Social Security Act prohibits use of federal funds for medical care provided to “inmates of a public institution,” has not only led to underresourced care during incarceration, but also created a class of uninsured individuals after release. Interruptions in insurance fuel some of the poor care transitions³⁹ and disruptions in treatment for chronic health conditions noted earlier. There are a number of opportunities within public health insurance programs that are of importance during COVID-19, including Medicaid, Medicare, and the Veterans Health Administration, for easing the transition from correctional to community health care. Individuals impacted by incarceration mostly are insured by Medicaid, a state-federal health care insurance that covers low-income adults. Importantly, Medicaid covers mental health and substance use treatment and services, as well as intensive case management, rehabilitation, and support services, heavily used by people impacted by incarceration. Enrollment in Medicaid prior to release is associated with increased engagement in treatment among people with serious mental illness.⁴⁰

Community health systems and public health experts can also work with their states to institute a number of policy changes that promote transition of health care during COVID-19.

Under Medicaid administrative rules, states can suspend (as opposed to fully terminate) Medicaid benefits when a person is incarcerated. States that suspend Medicaid should facilitate timely reactivation of Medicaid following release.⁴¹ Additionally, public health systems can support prison and jail systems in allowing incarcerated people to apply for Medicaid (and Medicare, as appropriate) prior to release. According to an inventory conducted by the Center for Mental Health and Addiction Policy Research at Johns Hopkins University, as of January 2015, 64 programs across 21 states had sought to enroll individuals living in correctional settings in Medicaid.⁴² Although the inmate exclusion provision would continue to apply, this pathway would be helpful once incarcerated individuals had been released, accelerating and easing their access to Medicaid coverage.

Conclusions

The community health system, built off the backbone of primary care, has heretofore largely ignored the health needs of the vast number of community members who have been incarcerated. The pandemic has created the necessity for community health systems to rethink their readiness to address the health needs of this large population and build the systems necessary to care for them during the present and future pandemics. The COVID-19 pandemic provides an opportunity to improve coordination between correctional and community health systems and to dismantle the siloed care that has been the standard and has proven inadequate—placing further at risk those incarcerated, those who work in correctional facilities, and the general population. Without addressing the intersection of incarceration and the primary care delivery system, the disparate racial impact of COVID-19-associated morbidity and mortality cannot be fully mitigated.

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The Asia Pacific Experience of Primary Health Care in the COVID-19 Pandemic

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The Asia Pacific region is a geographically, economically, socially, and politically diverse region of the world. In this review of the primary health care (PHC) response to the COVID-19 pandemic in the Asia Pacific region, we examine 19 countries and subregions within Asia Pacific, in which 2.34 billion people live—approximately 30% of people in the world.¹ The rich diversity of the region was reflected in a diversity of responses and strategies to the COVID-19 pandemic. We examined four domains within the Asia Pacific COVID-19 response related to PHC: (1) robustness of PHC services delivery prior to the COVID-19 pandemic, as measured by the World Health Organization’s (WHO) universal health coverage service coverage index (UHC-SCI); (2) implementation of mobile health strategies (i.e., telehealth, online information and support, etc.), (3) focus on vulnerable populations, and (4) establishment and utilization of physical community-based facilities in the COVID-19 response. The economic diversity among the 19 countries examined necessitated a stratification by income level, as categorized by the World Bank. For the purposes of this review, we summarized these four thematic areas among high-income countries and middle-income countries. The only low-income country in our review, the Democratic People’s Republic of North Korea, was not included because of a lack of data. Please refer to Table 1 for an overview of all countries examined.

Robustness of PHC systems prior to COVID-19

PHC systems greatly vary in the Asia Pacific region, both among and within countries. Although not a direct measure of the PHC system, the WHO’s UHC-SCI may be used as a proxy for primary care effectiveness, as it assesses countries based on four domains typically provided at the PHC service level: reproductive, maternal, newborn, and child health; infectious diseases; noncommunicable diseases; and service capacity and access to essential services.² In this section, we discuss UHC-SCI scores in relation to COVID-19 response, drawing out key themes both among and within countries. Table 2 summarizes UHC-SCI scores for countries in the region.

Table 1. *The Health Care, Demographic, and Geographic Diversity of the Asia Pacific Region*

Country	Universal Health Coverage (Y/N)	UHC-SCI Score	Population (in millions)	Geographic Orientation
High-Income Countries				
Australia	Y	87	25.5	Continent
Brunei	Y	81	0.437	Island
Hong Kong	Y	unranked	7.497	Coastal
Japan	Y	83	126.476	Archipelago
New Zealand	Y	87	4.822	Archipelago
Singapore	Y	86	5.85	Island
South Korea	Y	86	51.269	Peninsula
Taiwan	Y	unranked	23.817	Island
Middle-Income Countries				
Cambodia	N	60	16.719	Peninsula
China	N	79	1,429.324	Coastal
Indonesia	Y	57	273.524	Archipelago
Laos	Y	51	7.276	Mainland, Peninsula
Malaysia	Y	73	32.266	Peninsula, Island
Mongolia	Y	62	3.278	Mainland
Myanmar	N	61	54.41	Peninsula
Philippines	Y	61	109.581	Archipelago
Thailand	Y	80	69.8	Peninsula
Timor-Leste	N	52	1.318	Island
Vietnam	N	75	97.339	Peninsula

The World Health Organization defines universal health coverage as “ensuring that all people have access to needed health services of sufficient quality to be effective while also ensuring that the use of these services does not expose the user to financial hardship.

Table 2. The WHO’s Universal Health Coverage Service Coverage Index (UHC–SCI) Among High- and Middle-Income Countries in the Asia Pacific Region

Income Level of Country	UHC–SCI Score Average	UHC–SCI Score Standard Deviation	UHC–SCI Full Range	UHC–SCI Interquartile Range
High income (n = 6)	85.00	2.45	[81, 87]	3
Middle income (n = 11)	61.91	11.81	[43, 80]	14

High-income countries

High-income countries examined in the Asia Pacific region all ranked high on the UHC–SCI. For the majority of high-income Asia Pacific countries, a high UHC–SCI score correlated with a COVID–19 strategy centered around PHC, including mobilization of PHC facilities and increased investments in PHC by national governments. Specific examples are discussed later in the chapter.

Japan’s robust PHC system played a tremendous role during the fight against COVID–19. Between 2013 and 2017, the UHC–SCI has given a “high” score to Japan (2017 score of 83 on a scale from 0 to 100). The high score of Japan’s universal health system was related to strategies that were implemented during COVID–19, ultimately leading to Japan’s case count being effectively lowered.³ A vast network of community-based public health centers staffed by nurses, physicians, and volunteers spanning Japan helped maintain overall population health in the country, with the assistance of thousands of primary care providers. The community-based centers were central to mobilizing personal protective equipment (PPE), medical personnel, contact tracing, COVID–19 testing, and cost coverage. Additional community treatment centers were constructed at the onset of the virus to provide care and treatment services to communities.³

Community clinics were also essential in Singapore’s and Taiwan’s COVID–19 responses. Using a similar approach as Japan, Singapore’s (UHC–SCI score of 86) COVID–19 strategy was heavily reliant on primary care institutions and measures. One of the most effective strategies was reactivating Public Health Preparedness Clinics. These are preexisting community-based facilities that increased access to primary care during the pandemic.⁴ Through these facilities, PPE was distributed, patients were cared for, and local transmission was reduced significantly. Non-COVID–19-related primary care services were continued throughout the pandemic through these clinics, ensuring continuity of care.⁵ Taiwan (UHC–SCI unranked by WHO) quickly mobilized 156 community clinics to screen patients exhibiting COVID–19 symptoms to prevent overburdening hospitals and possible hospital outbreaks.⁶ After screening, patients with severe conditions were sent to designated hospitals that were well equipped.

Similarly, Australia has a strong primary care system (UHC–SCI 87) of doctors, nurses, and integrated health care workers, such as allied health professionals, midwives, community pharmacists, and Aboriginal (indigenous Australian) health workers.⁷ When the

first COVID-19 cases were identified, Australia's chief medical officer held a Primary Care COVID-19 Preparedness Forum with representatives from medical practices, Aboriginal and Torres Strait Islander health workers, the disability sector, PHC delivery networks, and various levels of government. Australia's initial primary care response package in March 2020 was \$2.4 billion, with \$1.1 billion allocated specifically for COVID-19, focused upon six sectors: (1) funding of telehealth delivery services; (2) establishment of call centers to triage patients with COVID-19 symptoms or exposure; (3) establishment of a network of community respiratory clinics; (4) development and delivery of online infection training; (5) measures to safeguard the health of Aboriginal and Torres Strait Islander communities; and (6) messaging to primary care providers in a consistent manner.⁷

New Zealand (UHC-SCI 87) also has a health care system centered around PHC. The value placed on primary care, along with a strong existing network of primary care facilities, allowed for New Zealand to quickly mobilize the COVID-19 response at the primary care level.⁸ New Zealand created a national primary care COVID-19 reference guide for all providers to follow four steps: (1) infection prevention and control for patients and staff; (2) clinical care; (3) cleaning; and (4) management of patients. Primary care providers were given a set of standardized instructions and triage policy for suspected COVID-19 infections.⁸ Patients were directed away from the hospitals to avoid exceeding capacity when home care was suitable. Meanwhile, classified red-flag symptoms mandated urgent clinical review. Those at greater risk for spreading COVID-19 were categorized as a higher index of suspicion (HIS) and provided different protocols. A community-based public health unit informed patients who tested positive and conducted daily monitoring until the patient was cleared for release. All patients, regardless of test outcome, received ongoing primary care support depending on their level of illness.⁸

Hong Kong's public-private health system operates in a dual system, with 90% of inpatient care provided by public hospitals and the remaining covered by the private sector.⁹ Unlike other high-income countries and regions, Hong Kong focused on leveraging public hospitals' services for the first two waves of the pandemic. During the third wave, the government, recognizing the importance of primary care and community-based care, established two community treatment facilities to curb rising cases. The facilities admitted patients in stable conditions to ease bed space in the public sector. In February 2020, the government provided \$129 million to secure the PPE supply in the public sector and all community treatment facilities.¹⁰

Middle-income countries

There is a greater range of UHC-SCI scores among the middle-income countries in Asia Pacific. The diversity in UHC-SCI scores is reflected in the country's COVID-19 response strategy, and whether it incorporates PHC. Overall, middle-income countries had less of a primary care focus in their COVID-19 response, a notable difference from the high-income countries.

The People's Republic of China (UHC–SCI 79) has grown its primary care system significantly over the past decade. For example, China increased financial investments into primary health care by more than 10-fold (\$29.34 billion in 2018) over the past 10 years.¹¹ The country has also dedicated almost 4 million primary care practitioners to the pandemic relief effort.¹⁰ Primary care practitioners are in charge of screening suspected cases, visiting residents in quarantine, contact tracing, monitoring, and surveillance checkpoints. Despite this broad responsibility, primary care practitioners indicated an initial lack of PPE.¹¹ A shortage of professional human resources in China also made outbreak control difficult.

An independent review of Thailand's (UHC–SCI 80) COVID–19 response identified several factors that contributed to effective pandemic management. These factors include past investments into enhancing health care capabilities (such as the Village Health Volunteer system), public–private sector collaboration, establishment of multilingual COVID–19 hotlines for migrants, extending free COVID–19 treatment to non–Thai residents, rapid expansion of health care facilities, hospitalization of all COVID–19 cases (even asymptomatic ones), maintenance of essential health care services, employment of telemedicine, and delivery of medicines via the mail.¹² As the implementation of pandemic management responses directly used primary care tactics, it effectively fed into Thailand's high UHC–SCI score.

Laos, Cambodia, Philippines, and Vietnam all ranked lower on the UHC–SCI scale in comparison to other middle–income Asia Pacific countries. Differing from nations like China and Thailand, the aforementioned countries centered their pandemic responses in hospital systems. COVID–19 patients and treatment regimens remained in the walls of hospitals, which nevertheless remained above capacity because of hospital bed and PPE shortages. Thus, their lower UHC–SCI score was reflected in the lack of integration of primary care response tactics, such as primary care facilities and community–based units.

Summary

Asia Pacific countries with robust PHC systems, including universal health coverage, had efficient responses to COVID–19 and relied upon those systems for their pandemic response. The high UHC–SCI scores of high–income countries among the Asia Pacific region correlate to their robust PHC systems' response to COVID–19. Factors such as emphasis on community care, vast networks of primary care providers, and national PHC initiatives are contributors to the robustness of PHC systems. Nations that ranked lower in the UHC–SCI index and did not have robust PHC systems prior to the pandemic predominantly relied on hospital–based COVID–19 control and treatment strategies, utilizing primary care for screening and testing efforts.

Implementation of mobile health strategies

The mobile health strategies in the Asia Pacific region expanded upon the onset of COVID-19. Most countries within the region implemented strategies to increase mobile health and telehealth to some extent, including measures such as online consultation services, webinars to disseminate information to the health care professionals and the general public, and various methods to reduce transmission. In this section, we outline the different approaches taken by the high- and middle-income countries in the Asia Pacific region to implement mobile health strategies.

High-income countries

Many high-income countries expanded telemedicine services and mobile health strategies to reduce transmission of the virus. In March 2020, Japan's Ministry of Economy, Trade, and Industry launched an initiative to provide citizens with a free remote health consultation service, addressing concerns regarding COVID-19. Many hospitals and community-based treatment facilities also installed mobile applications in patients' rooms to report body temperature two times a day, minimizing contact between patient and care provider.^{3,13} South Korea took part in a similar initiative with the government's creation of the Korean Medicine telemedicine center, providing patients with consultation for different medical services. Prior to admission into hospitals or other treatment centers, patient symptoms were assessed through telephone interviews to reduce risk of transmission.¹⁴

Singapore's Ministry of Health announced a new telemedicine sector in January 2020. The Infocomm Media Development Authority and Enterprise Singapore not only expanded teleconsultation digital solutions but also announced grants and subsidies for smaller health care providers, specifically primary care providers, to incentivize adoption of the teleconsultation solutions.^{4,5} Increased communication and information access was achieved through email and secure group chat on mobile devices. This mode of communication was observed to be effective and time saving. Brunei similarly strengthened its existing mobile health platforms, which limit patient-doctor physical contact, but allowed for continued assessment of symptoms via phone, email, and video.¹⁵

Australia quickly shifted to the use of telehealth through its extensive primary care network. Funding from the Medicare Benefits Schedule allowed the government to double bulk-billing incentives (doctors sending bills directly to Medicare) and deliver 11 million telehealth services within the first few months. Australia used a four-stage approach to roll out its telehealth program: (1) consultations for most vulnerable populations; (2) consultations for obstetrics and midwifery, nurse practitioner care, and mental health; (3) expansion of telehealth for health care providers caring for vulnerable populations; and (4) expansion of telehealth consultations to all patients.⁷ The nation simultaneously developed a series of online education modules for infection prevention and control, including eight modules for care workers for the residential aged (elderly who can no longer live at home) and a 30-minute online course for all

care workers. Regular primary care webinars were streamed and accessed by more than 100,000 health care workers.⁷ Australia also established a national call center called Healthdirect to provide free health information and advice. The program includes an online COVID-19 symptom checker that reached a cumulative total use of 370 million people in May 2020.⁷

Middle-income countries

Middle-income countries adopted new telemedicine services and mobile health strategies to reduce transmission of the virus. Peking Union Medical College Hospital in China expanded free online consultation and medical resources for patients during the pandemic. For example, a scientific pandemic prevention ebook called *Questions and Answers for Public Protection Against COVID-19 Infection* was released to the public to spread awareness of public health guidance.¹⁶ Pinetree Care Group launched a virtual rehabilitation program and nursing classes to encourage patients and families to practice self-care at home and in their communities.¹⁶

The Malaysian Ministry of Health ran daily webinars and Facebook Live sessions to provide regular updates on the pandemic to local communities and primary care providers.¹⁶ The director-general of Health Malaysia hosted the daily live telecasts on the current status, actions, and advice for dealing with the coronavirus.¹⁷ All webinars included question-and-answer sessions between the public and health care professionals. Family medicine specialists also conducted live 30-minute sessions to engage with the public.¹⁷

Similar to Malaysia's online webinars, Indonesia hosted an online seminar with the World Health Organization to enhance the role of primary health care in prevention and control of the coronavirus.¹⁸ Thousands of primary care providers, specifically those at *puskesmas* (remote community health centers), participated in the seminar. Attendees were required to complete a certification test at the end of the seminar, to ensure their competency in the COVID-19 response for their respective communities.¹⁸

Many countries adopted new systems to help triage patients and risk-stratify them for treatment escalation. Thailand piloted a new health model to stratify patients based on the urgency of medical treatment and the risk of COVID-19 infection. Less urgent cases were supported through telemedicine from primary care providers and medications delivered directly to patients' homes.¹⁹

The government of Philippines recently enabled telehealth providers to issue case reports and prescriptions at community clinics.²⁰ Telemedicine was employed to care for vulnerable populations, such as HIV patients, during lockdown measures. Various telemedicine methods were employed to monitor close contacts of COVID-19 cases and individuals under quarantine.²¹ Vietnam implemented strategies that piloted telemedicine to link referral hospitals to PHC facilities.²² Tertiary care providers could advise local PHC providers through remote communication, preventing the need for patients to travel to referral hospitals during the pandemic, and allowing receipt of care through primary care providers in the community. Many of the telemedicine services in Vietnam were provided for free during the outbreak of the pandemic.²³

Summary

Many countries in the Asia Pacific region adopted telehealth infrastructure and resources to increase communication and limit physical contact. Telehealth spread educational content during the pandemic response through webinars, e-pamphlets, ebooks, and more. Primary care providers conducted online consultations for COVID-19, and participated in electronic consultations between tertiary and primary care providers. As a result, physical doctor-to-patient contact was limited to emergency situations to prevent spread of the disease. Primary care experienced rapid uptake and scale of mobile health strategies in response to COVID-19, introducing new forms of health care delivery and engagement. These innovations are expected to stay beyond COVID-19 and continue to redefine the PHC ecosystem.

Focus on vulnerable populations

Vulnerable populations were given high priority for COVID-19 surveillance and treatment in the Asia Pacific region. This category encompassed populations most likely to be infected and populations most likely to face negative health outcomes from COVID-19, such as the elderly, migrant workers, the immunocompromised, and remote communities.

High-income countries

Vulnerable populations were disproportionately affected by COVID-19 within Asia Pacific countries. The large elderly population was one such group. Singapore's response to the risk among the elderly population was emblematic of the challenges in the region.²⁴ At the onset of the pandemic, geriatric care in Singapore significantly decreased in availability due to shelter-in-place policies. The government took responsibility for all costs of testing and treatment for COVID-19, and rapidly scaled up testing at nursing homes.¹⁶

Additional vulnerable groups became infected in Singapore and similarly experienced a government response focused on testing and contact tracing. In April 2020, Singapore experienced a rapid rise in COVID-19 infections due to widespread transmission among migrant workers living in crowded dormitories. The high prevalence (over 15% as of October 2020) of COVID-19 among this vulnerable population was likely due to inadequate safe distancing and mingling of workers at common facilities such as eating areas and toilets, often due to overcrowded living situations.^{25, 26} Migrant workers had limited access to health care due to language barriers, hesitancy to seek medical care due to a fear of forfeiting jobs or salaries, and concern about out-of-pocket expenditures for outpatient care not covered by insurance.²⁷ Widespread testing was conducted among dormitory residents. Workers who had mild symptoms were sent to community care facilities for further medical care. On-site health care centers were also quickly established in the dormitories. Health care volunteers and local primary care networks were activated to help mitigate the outbreak through contact tracing. Accommodations at other sites such as public housing flats and military installations were arranged to facilitate safe distancing between workers.²⁶

As in Singapore, access to geriatric care was reduced in Hong Kong due to shelter-in-place policies. The elderly populations experienced a rise in infections. Outbreaks identified in homes for the elderly in mid-July triggered a third wave of COVID-19 after generalized first and second waves had dissipated.¹⁰ Elderly persons living in cramped rooms with poor ventilation triggered the transmission within elderly care facilities.²⁸ Regular free testing for the elderly and their caregivers was made available to prevent future outbreaks through isolation and contact tracing.

Remote communities were at high risk for lack of resources and infection due to their separation from the mainland in the Asia Pacific region. Australia sought to address this through the establishment of the National Aboriginal and Torres Strait Islander Advisory Group on COVID-19 with the Department of Health and National Aboriginal Community Controlled Health Organization.⁷ Grants were provided for the Aboriginal and Torres Strait Islander people to develop their own, culturally appropriate, preparedness plans. National protocols were also adapted for local use.⁷

Middle-income countries

Vulnerable populations in middle-income countries were heavily affected by COVID-19. Malaysia focused testing on high-risk groups and locations due to limited resources. These included migrant workers employed in the construction, manufacturing, and retail sectors, who were particularly at risk for COVID-19 due to their crowded living accommodations. The Ministry of Health required employers to screen employees before entering the workplace, provide hand sanitizer, enforce physical distancing, and regularly disinfect shared spaces to protect migrant workers.¹⁸ More than 22,000 migrant workers were screened as of May 2020, resulting in a 4% positive test rate.¹⁸ The Ministry of Health tested residents and staff at nursing homes in the country to protect the elderly, and it closely coordinated with the United Nations High Commission for Refugees to provide refugees and asylum seekers health care during the pandemic.¹⁸

Among middle-income countries, an additional vulnerable population was immunocompromised patients, who were overrepresented due to the endemicity of HIV and a recent increase in diabetes and cancer. To ensure HIV patients continued to have access to antiretroviral therapy, the Philippines increased the number of antiretroviral therapy community collection points.²⁹ However, continuity of medical access was not experienced in all countries; in Laos, utilization of essential health services decreased.³⁰ Furthermore, the government ordered private hospitals and clinics to close as part of COVID-19 containment efforts.³¹

Summary

Like many countries globally, health inequities between vulnerable and less vulnerable populations in the Asia Pacific region were exacerbated by the COVID-19 pandemic. Although many countries in Asia Pacific have universal health coverage, certain groups of people still experienced higher rates of COVID-19 than others. The elderly population composes a higher proportion in many Asia Pacific countries, and the elderly's fragility and multiple medical

comorbidities place them at higher risk. The high percentage of migrant labor within the Asia Pacific region also highlights the need for further attention to labor and living conditions of migrant workers, for whom insurance coverage and access to primary care may be limited or effectively inhibited by immigration status, language barriers, and fear of job loss. Finally, those already living on the fringes of society, including people living with HIV, refugees and asylum seekers, and indigenous communities were also disproportionately affected.

Establishment and extent of utilization of physical community-based facilities

Asia Pacific countries utilized their community-based facilities to provide treatment and testing for COVID-19. Middle-income countries, which were overwhelmed at a national level, relied heavily on community-based facilities. These facilities were the first point of contact for many patients in the Asia Pacific region, as they are highly ingrained in the PHC system.

High-income countries

Several countries within the high-income category responded to the pandemic with either the reactivation of physical community-based facilities that had been used during other public health crises, or the creation and establishment of new facilities in light of COVID-19. The government of Singapore reactivated nearly 1,000 Public Health Preparedness Clinics. This effectively reduced “doctor hopping” amongst patients through government-subsidized programs, while simultaneously increasing access to primary care. The primary care response expanded in Singapore, allowing for 71% of COVID-19 positive patients to “visit primary care doctors within two days of symptom onset.”^{4,5} More notably, however, was Singapore’s triage system implemented in the respective community-based facilities. Patient flow was heavily amended to diminish risk for cross contamination not only from patient to patient, but also patient to doctor. These containment measures were supplemented by new clinical protocols that surrounded PPE strategies, a new system for electronic medical records, and vast numbers of aforementioned telehealth practices.⁴

Similarly, South Korea instated community treatment centers throughout various regions. Between March 3 and March 26, 2020, 3,033 patients were admitted to 15 community centers.^{13,14} Japan was another actor in the coalition that utilized community-based facilities with the formation of multiple community treatment centers in cities across the country. The centers were fully equipped with a robust staff, including multiple physicians, nurses, radiologic technicians, public health doctors from the Ministry of Health and Welfare, and volunteers.³

Hong Kong, unlike South Korea, Japan, and Singapore, admitted all confirmed and preliminary confirmed cases to the hospital. Recovering patients with stable conditions, who were fever-free for 48 hours, less than 50 years old, and mobile were redirected to community

treatment facilities.³² Hong Kong established two community treatment facilities providing more than 2,000 beds to reduce the pressure on public hospitals. The Hospital Authority also deployed doctors and nurses to respective community treatment facilities. In Taiwan, 156 community-based care facilities were set up to treat patients with mild symptoms. Community-based care facilities screened individuals with COVID-19 symptoms and sent patients to designated hospitals for treatment based on their condition.⁶

Middle-income countries

COVID-19 testing and treatment was extended to community centers and public health clinics due to limited capacity at public hospitals in many middle-income countries. Community health centers were given the responsibility of conducting public health surveillance, providing treatment, and performing contact tracing. During the initial outbreak in Wuhan, China, more than 70 primary care clinics supported screening, testing, and contact-tracing efforts.³³ More than 200 township and village doctors were drafted for 392 inspection spots along the roads to check passengers and drivers for symptoms in Zhejiang province.³³ Similarly, Indonesia is home to around 10,000 *puskesmas* in remote villages and inland regions that were instrumental in providing COVID-19 relief.³⁴ Many public health programs and *posyandu* run by *puskesmas* shut down due to the transition to pandemic-focused services.³⁴ Health workers in Malaysia were mobilized from the *Klinik Desa* (rural health clinics) and small community clinics to more frequented clinics to maximize resources.¹⁸

Treatment strategies varied from country to country, predominately utilizing community-based treatment facilities or hospital-driven responses. The Philippines developed community treatment facilities,³⁵ despite only 20% of total hospital beds being set aside for COVID-19 patients.³⁶ Mild COVID-19 cases were not hospitalized but are isolated at home or in designated community facilities.³⁷ Alternatively, Vietnam's COVID-19 response has been hospital-driven, though rapid-testing centers were also established in the community.³⁸ In Laos, COVID-19 testing and treatment were available only at hospitals, with minimal focus on PHC and/or community-based interventions.³⁹

Asia Pacific countries that directed patients to public hospitals still utilized community-based facilities to supplement national-based care. Testing was extensively conducted on a community level in Thailand, despite all COVID-19 cases being sent to hospitals or isolation facilities regardless of symptoms.⁴⁰ Village health volunteers assisted in case finding, contact tracing, and health communication. Mongolia adopted a similar approach to Thailand, with all COVID-19 cases being hospitalized and community testing being utilized. For example, a 300-bed hospital was established preemptively and walk-in testing sites were developed in Ulaanbaatar, the capital of Mongolia.⁴¹

Summary

Countries with an extensive network of existing community-based facilities rapidly mobilized these facilities for the pandemic response. In addition, countries such as Japan, South Korea, Indonesia, Philippines, and China built new community treatment centers for individuals to receive testing and treatment without having to go to hospitals, while Singapore reactivated previously dormant Public Health Preparedness Clinics that had been built for previous disease outbreaks. Thailand, Mongolia, and Vietnam had responses that were hospital-reliant, with community-based clinics supporting contact tracing, testing, and health communication efforts.

Conclusions

The Asia Pacific region is incredibly diverse geopolitically, economically, and socially. Key themes among the robustness of PHC systems, establishment of mobile health strategies, focus on vulnerable populations, and utilization of community-based facilities emerged across the region's primary care response to COVID-19.

Among the high-income countries in the region, high scores on the UHC-SCI were associated with a COVID-19 strategy and response relying on PHC and community-based approaches in the prevention, testing, care, and treatment of COVID-19, in addition to contact tracing and quarantine support functions. Countries relying on a PHC response backbone were able to quickly scale up mobile health strategies and interventions. These actions not only helped to stem COVID-19 cases and deaths, but also allowed for increased continuity of care for chronic conditions that themselves serve as risk factors for COVID-19 infection. The strong commitment to universal health coverage reduced health inequities in COVID-19 care and treatment as compared to other regions that do not have universal health coverage policies in place.

Among middle-income countries in the region, the COVID-19 response at the PHC level was more diverse. Most of the middle-income countries in the region utilized frontline health workers and community health centers in prevention, health promotion, and testing. Care and treatment services were more limited at community-based facilities, as compared to high-income countries, due to varying capacities and inadequate resources. Mobile health strategies were utilized by many middle-income countries to deploy accurate information and train frontline health workers.

In both the high-income and middle-income countries, vulnerable populations—particularly older adults and migrant workers—were at disproportionate risk and had the most limited access to telehealth or in-person primary care facilities. Further understanding how to expand care for these populations during the COVID-19 pandemic, and in preparation for future outbreaks, will serve as a vital strategy to ensure PHC systems can support vulnerable populations.

Lessons from the Asia Pacific region emphasize the need for an extensive primary care response to the COVID-19 pandemic. The values of primary care—technology-enabled, accessibility, and community—were pivotal in the development of public health measures across high-income and middle-income countries. The Asia Pacific region is home to a variety of PHC systems that, in response to COVID-19, differed in implementation but coincided in purpose.

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Reproductive Health: Equity and Innovation During the COVID-19 Pandemic

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The COVID-19 pandemic has expanded existing disparities and created new barriers in reproductive health care, especially for women from marginalized and vulnerable communities. Primary care providers play a central role in alleviating the barriers posed by the pandemic for women seeking reproductive health care. In this chapter, we provide evidence-based recommendations for primary care providers to protect their patients' access to essential contraception and abortion services. Our key recommendations include recognizing contraception and abortion as essential care, leveraging telemedicine services for reproductive health care, adopting clinical innovations that are both patient-centered and evidence-based, and supporting policy-level measures to protect future access to care.

The role of primary care in supporting reproductive justice

The COVID-19 pandemic has amplified existing health care disparities and created new obstacles for women seeking reproductive health care. Women from marginalized or vulnerable communities have suffered disproportionate socioeconomic impact throughout the pandemic—acting simultaneously as parents, teachers, and employees (when work from home was feasible).¹ With the associated economic downturn, nearly one in ten women in the United States is at risk of losing her employer-sponsored health care coverage.² Loss of insurance coverage means loss of reproductive health care coverage for most of these women.

By impeding access to reproductive health services, the COVID-19 pandemic heavily affects both people who are low income and people of color. Low-income populations and people of color already experience greater reproductive health disadvantages compared to higher-income or white counterparts. For example, 75% of people who have an abortion are poor or low income,

a proportion that increased between 2008 and 2014.³ Black women experience significantly higher rates of nearly every adverse outcome across reproductive health than white women, and are three to four times more likely to die in pregnancy than white women.⁴

The pandemic's disproportionate impact on women's reproductive health care is an issue of Reproductive Justice. The Reproductive Justice movement centers on four human rights: (1) the right to maintain personal bodily autonomy, (2) the right to have children, (3) the right to not have children, and (4) the right to parent children in safe and sustainable communities.⁵ Primary care providers should be guided by the tenets of Reproductive Justice in their work to improve reproductive health outcomes. During the crisis, primary care providers have played a central role in mitigating barriers for patients, showing great ingenuity and adopting numerous innovations that will become the standard of care even after the pandemic recedes.

Recognizing contraception and abortion as essential care

Primary care providers must demand that contraception and abortion be recognized as essential care. At the outset of the pandemic, defining essential medical services was self-evident for some types of problems—for example, bleeding in pregnancy—while for others it was more challenging. What about patients desiring contraception? What about patients desiring to stop their contraception? What about patients needing to terminate a pregnancy?

At a time when patients are facing heightened personal and financial uncertainty, preserving access to reproductive health services is critical. Due to the impact of the pandemic on their lives, one-third of women overall—and approximately 45% of Black and Hispanic women—changed their pregnancy-related plans (i.e., they want to either delay pregnancy or have fewer children).⁶

With the reduction in face-to-face medical encounters caused by the COVID-19 stay-at-home orders, many patients have encountered new barriers when seeking contraceptive care. A survey of clinics delivering family planning services showed that more than 30% of clinics had asked patients to postpone the insertion and/or removal of long-acting reversible contraceptives (LARC) such as the implant or intrauterine device (IUD).⁷ Postponing the desired removal of a LARC is problematic because it obligates patients to continue to use provider-controlled contraception against their wishes. The Guttmacher Institute reports that one in three women reported delays or cancellations in their contraception clinic appointments, a finding that was more common among Black and Hispanic patients and among patients with an income less than 200% of the federal poverty threshold.⁸

Recognizing abortion as essential care has been even more complex than protecting access to contraception. In Massachusetts, as well as a handful of other states, abortion was deemed an essential service and clinics were not compelled to close. Governments in other states, however, exploited the pandemic for political advantage, further obstructing abortion access beyond what had been deemed feasible through the courts.⁹

Access to abortion is always time-sensitive and has a profound long-term impact for patients and their families. Protecting abortion access became especially important during the

COVID-19 pandemic because pandemic-related challenges changed women's needs, and such access preserves Reproductive Justice.

Leveraging telemedicine: Benefits and limitations

The second step in preserving access to contraception and abortion is leveraging telemedicine in primary care practices. The loosening of government rules and regulations by the Centers for Medicare and Medicaid Services (CMS) during the COVID-19 pandemic allowed for pay parity across telephone visits, video visits, and in-person visits, as well as the waiving of requirements for an in-person visit before a telemedicine visit.¹⁰ By making telemedicine widely accessible, these regulatory changes created opportunities for innovation in delivery of health care services during the pandemic.

The benefits of telemedicine have been demonstrated over the past decade by agencies such as Veterans Affairs, the Indian Health Service, and the Department of Defense, who have shown that telemedicine reduced patient travel time, increased access to care for rural and disabled veterans, and expedited care for patients in isolated communities.¹¹ If we extrapolate these findings for people seeking reproductive health care, we can posit that telemedicine improves health care access by removing barriers caused by hospital and clinic closures, lack of child care or transportation, work schedules, and financial constraints.

The rapid deployment of telemedicine predictably uncovered disparities in access to the digital world. Those who were already disadvantaged—lower income, elderly, rural, differently abled, and non-English-speaking populations—were not able to pivot as easily with the rest of the health care system toward telemedicine.¹² Digital literacy limited patients' ability to access remote clinical care,¹³ and issues of privacy were also relevant for people sharing physical space or devices with others. Language barriers only further magnified disparities in access to telehealth; at one clinic in San Francisco, for example, 14% of patient visits were for non-English speakers prior to the pandemic, but only 7% after telehealth was instituted.¹⁴

Even as telemedicine creates new access to care, its reliance on technology risks widening the health equity gap between populations. In the future, telemedicine services must be structured with an eye to reducing disparities. Specifically, to preserve equity for those vulnerable patients who can participate in telephone but not video visits, it will be important to offer continued pay parity for providers regardless of visit type.

Despite its limitations, telemedicine is helping to fill in some service gaps for the delivery of reproductive health services,⁸ and it can shorten or entirely replace in-person visits. In a subsequent section of this chapter, we offer several specific recommendations for primary care providers on optimizing the use of telemedicine for contraception and abortion care.

Streamlining care through the use of evidence-based practices

The third important action for primary care providers to take during the pandemic is to reassess their clinical practices to ensure they are consistent with current guidelines. This section addresses evidence-based approaches to reproductive health care that both reduce face-to-face patient encounters and improve access to care.

Streamlining contraception care

In the United States, the Centers for Disease Control and Prevention sets evidence-based standards of care around contraception provision.¹⁵ These patient-centered practices are echoed by other standard-setting organizations¹⁶ and include “quick-start” implementation, including same-day placement of LARC or administration of injectable depot medroxyprogesterone acetate (DMPA).

Uptake of the recommended standards, however, has been impeded by the persistence of non-evidence-based clinical practices,¹⁷ including requiring a pelvic exam and/or cervical cytology; requiring separate visits for LARC counseling and placement; and delaying the start of a method until the patient’s next menses.^{15,17,18} By eliminating outdated practices, providers are able to forgo in-person requirements for services such as contraceptive refills, emergency contraception, and abortion counseling and follow-up.

The pandemic has forced practices to reexamine their workflows and move toward adopting more evidence-based practices. To guide this process, several organizations released urgent guidance on how to provide effective contraception and abortion care while minimizing in-person visits.^{7,16,19} The innovative practices presented in these evidence-based guidelines decrease dependence on provider visits, thereby elevating the quality of care while promoting patient-centeredness, autonomy, and safety. Specific innovations will be reviewed here regarding (1) self-administration of depot medroxyprogesterone acetate (DMPA), (2) insertion and removal of LARCs, and (3) blood pressure screening prior to prescribing combined hormonal contraceptives.

Self-administration of depot medroxyprogesterone acetate

Depot medroxyprogesterone acetate (DMPA) is a highly effective injectable contraceptive, available in both subcutaneous (SC) and intramuscular (IM) formulations. DMPA is most commonly administered in the IM formulation, requiring an in-person visit with a clinician every 13 weeks. The subcutaneous formulation (DMPA SC) is much less commonly available, but lends itself well to patient self-administration, something in which patients have a demonstrated interest.^{20,21} In a randomized controlled trial, a brief educational session successfully taught patients how to administer their DMPA at home, and these patients reported outcomes comparable to those of patients receiving the traditional DMPA IM.²²

Importantly, DMPA SC and DMPA IM maintain the same contraceptive efficacy.¹⁵ At the start of the COVID-19 pandemic, the Society of Family Planning recommended that providers consider offering DMPA SC for patient self-administration with a dosing interval up to 15 weeks as a way to decrease in-person visits.⁷ The National Family Planning and Reproductive Health Association also disseminated a practical guide for physicians, laying out clinical considerations, visual patient instructions, and administrative tips for coding and billing.²³

The provision of DMPA SC allows patients to continue their preferred method of contraception when that method might otherwise be withheld due to limited clinic access. In a demonstration project at an urban hospital where a majority of patients had publicly funded insurance, patients successfully navigated the use of DMPA SC. The project models the delivery of patient-centered care and offers tools and workflows to assist other practices, including guidance on patient recruitment, tips for clinician education, and links to multilingual patient education materials.²⁴ Notably, the project also demonstrates how to successfully improve access when serving a patient population historically isolated by socioeconomic and language barriers.

Enabling women to self-administer DMPA SC is an effective way to reduce in-person contact during the pandemic and has the major benefit of offering the patient increased privacy and convenience—rendering it a practice worth sustaining in the long term. For it to be widely adopted, however, limitations in insurance coverage and cost must be addressed.^{20,24}

For those patients preferring to continue with the intramuscular formulation of DMPA, in-person contact can be minimized through telemedicine contraception counseling before the visit,⁷ and by offering “curbside service” for repeat injections.²³ Our own institution dispatched vans and ambulances into the community to deliver prenatal care, postpartum follow-up, and DMPA injections (among other services), thereby decreasing patient exposure to the hospital and removing transportation barriers.

Insertion and removal of long-acting reversible contraceptives

LARCs are highly effective contraceptive methods placed by a provider during a clinic visit.²⁵ The US Food and Drug Administration (FDA) has approved two types of LARCs—the subdermal contraceptive implant, which is placed subcutaneously in the arm, and the IUD. During the pandemic, clinical guidance issued by the Society of Family Planning provided advice regarding both LARC insertions and removals.⁷

LARC insertion

Contraception decision making is a values-based process in which the patient weighs a variety of personal priorities. To support this process, it is imperative for providers to engage in a shared decision-making counseling model to help the patient integrate their personal priorities with medical knowledge before reaching their decision. Providers who focus solely on the clinical efficacy (especially of LARCs) risk promoting certain methods above others and giving biased, non-patient-centered counseling. Awareness of such biases is especially important

when caring for populations experiencing reproductive coercion, specifically low-income patients and people of color.^{26,27}

When a patient chooses a LARC during the pandemic, it may be appropriate to explore the possibility of delaying the insertion in the interest of minimizing in-person encounters and to offer other short-term options. However, LARC insertion should be scheduled if requested by the patient.⁷

Several practices with regard to LARC insertion are important during the pandemic and beyond. (1) The counseling portion of the visit should occur via telemedicine to shorten face-to-face contact during the insertion.¹⁹ (2) LARC insertion should not be delayed for results of screening tests (e.g., for sexually transmitted infection or cervical dysplasia).¹⁵ (3) All LARCs can be placed immediately postpartum, after surgical abortion, and after completed medication abortion.²⁵ (4) The etonogestrel implant can be placed at the initiation of medication abortion.²⁸ Finally, (5) LARCs should be offered as safe and effective methods for all women, including nulliparous patients and adolescents.²⁵

LARC removal

The pandemic shone light on both ethical and clinical considerations for LARC removals. From an ethical standpoint, it is important to honor a patient's request for LARC removal because that request constitutes a withdrawal of their consent to use the method. Informed consent at the time of device placement includes a clear agreement that the device will be removed when the patient chooses, and denying removal during the pandemic effectively coerces the patient to continue its use. The imperative to respect patient autonomy looms large when caring for populations that have been coerced in the past to use temporary or permanent contraceptive methods. In the interest of preserving individual reproductive autonomy, LARC removals should be scheduled when requested by the patient.

From a clinical standpoint, the pandemic elevated the importance of using efficacy data on the use of several LARC devices beyond the FDA-approved time frame. The contraceptive implant, the 52 mg-LNG IUDs, and the copper IUD each have data supporting their extended use beyond FDA-approved time frames.²⁹⁻³² Removal of these devices can safely be deferred, if the patient desires, until the evidence-based duration of use as described in Table 1. The duration

Table 1. Evidence-Based Lengths of Use for LARC Devices

Device	FDA-Approved Use	Evidence-Based Use
Etonogestrel Implant (Nexplanon)	3 years	5 years ^{29,30}
52 mg-LNG IUD (Mirena)	5 years	7 years ²⁹⁻³²
52 mg-LNG IUD (Liletta)	6 years	
TCu380A (Paragard)	10 years	12 years ^{31,32}

of effectiveness for levonorgestrel IUDs not listed in Table 1 is still under investigation and extended use is not recommended at this time.²⁵

For patients requesting LARC removal, a telemedicine visit can be used to discuss any concerns or side effects the patient may be experiencing, and to explore whether the patient desires another method. For patients specifically desiring IUD removal, providers may offer the option of self-removal.⁷ Among patients attempting self-removal, one in five is successful.³³

Blood pressure screening for combined hormonal contraceptives

Combined oral contraceptive (COC) pills are the most commonly prescribed reversible contraceptive, with an estimated 9 million users in 2015–2017.³⁴ COCs, along with other combined hormonal contraceptives (CHCs) (i.e., the intravaginal ring and transdermal patch), have the benefit of not requiring an in-person visit with a provider and can be initiated and discontinued by the patient independently once a prescription has been issued.

A challenge during the COVID-19 pandemic was to measure blood pressure before CHC initiation, a practice that has been the standard of care to mitigate the elevated cardiovascular risk of CHC use among hypertensive patients.¹⁵ The need to screen for elevated blood pressure prior to initiating CHCs could be addressed in a number of ways. For example, it is acceptable to rely on self-reported blood pressure measurements, with patients taking their blood pressure at home or in a pharmacy.¹⁵ Given that the US Preventive Services Task Force recommends blood-pressure screening every three to five years, it is also acceptable to rely on a reading recorded in the medical record within the past five years.¹⁹ If neither is available due to the pandemic, providers may prescribe CHCs after screening for a history of elevated blood pressure and counseling patients about cardiovascular risks associated with CHC use if they have elevated blood pressure. Providers could schedule a subsequent in-person visit for blood pressure assessment when feasible.³⁵

In accordance with the standard of care in place prior to the pandemic, providers may prescribe a one-year supply of CHCs. This practice is associated with increased continuation of the method.¹⁵ During the pandemic, offering a one-year supply of CHCs is encouraged, as is the use of mail order for prescriptions.⁷

Streamlining medication abortion care

A joint statement by the American College of Obstetricians and Gynecologists (ACOG) and several other national organizations in March 2020 unequivocally stated that “abortion is an essential component of comprehensive healthcare [and is] a time-sensitive service for which a delay of several weeks, or in some cases days, may increase the risks or potentially make it completely inaccessible.”³⁶ By adopting innovative but evidence-based protocols, providers were able to continue medication abortion services throughout the pandemic. These innovations were both feasible and patient-centered, and thus may endure into the future.

While medication abortion is a safe and effective way to end early pregnancy, access has been hindered by barriers such as child care, work obligations, transportation issues, and financial

obstacles. These barriers were compounded during the COVID-19 pandemic by new challenges such as stay-at-home directives and difficulty accessing ultrasound and laboratory services due to clinic closures. To address these barriers and support practices offering medication abortion, new “no-test” protocols have been developed, supporting provision of remote medication abortion.^{33-38, 43, 44}

The delivery of no-test medication abortion via telemedicine was supported by several organizations, including ACOG, the National Abortion Federation, Reproductive Health Access Project, and the Society of Family Planning.^{36-38,43} The no-test protocols were determined to be safe and effective, with outcomes comparable to prepandemic practice.^{40,42,44} Several provider toolkits and sample protocols were also made available.^{43,45} Using specific criteria, patients were able to avoid a pretreatment ultrasound, physical exam, and laboratory testing, and receive timely medication abortion care without an in-person visit. The approach was an option for patients who were certain of the date of their last menstrual period (LMP), were less than 77 days since LMP, had no contraindications, and had no risk factors for ectopic pregnancy.⁴⁰⁻⁴¹

Prepandemic care models required three tests prior to initiation of medication abortion, including an ultrasound (or bimanual exam) for pregnancy dating, Rh testing, and hemoglobin screening. In contrast, no-test protocols relied on reported LMP for pregnancy dating, the accuracy of which is well supported.⁴⁶ International evidence revealed that Rh sensitization is highly unlikely before 56 days since LMP, and new guidelines forgo Rh testing until then.⁴⁷ Evidence also suggests Rh testing may not be necessary until 70 days since LMP.⁴⁸ Additionally, the need for pre-abortion hemoglobin testing can be determined by screening for a prior history of anemia or any current symptoms.⁴⁷

A number of barriers prevented providers from adopting a no-test approach to medication abortion. Some providers expressed discomfort about potential adverse outcomes such as missing a more advanced gestational age⁴⁶ or an ectopic pregnancy, although their concerns were not supported by data.^{40,42} Using pre-abortion screening questions, providers were able to offer services to patients without a known adverse outcome of ectopic pregnancy.^{40,42} Some states prohibited distributing mifepristone by mail or by pharmacy; however, clinics creatively overcame these obstacles in the short run by offering curbside pickup from a clinic staff member or using clinic outdoor lockers with a passcode.⁴⁵

The greatest barrier to medication abortion provision was that, despite ample safety data, the FDA designated mifepristone as a drug that requires a Risk Evaluation and Mitigation Strategy (REMS). The REMS designation made it impossible for mifepristone to be dispensed in pharmacies and requires prescribing providers to register with both the product distributor and the FDA. In the summer of 2020, the American Civil Liberties Union successfully challenged the REMS, removing the in-person provider dispensing requirement and allowing for mail delivery from a registered provider during the COVID-19 public health emergency. Providers still had to consider state-based regulations, however, before implementing changes to their protocols to overcome the REMS barrier.⁴⁹

While offering no-test medication abortion was not feasible for all clinics, it was still possible to offer remote follow-up. Before the pandemic, medication abortion follow-up was typically performed by a provider using ultrasound examination or serial serum human chorionic gonadotropin testing.⁷ New remote follow-up options during COVID-19 included high-sensitivity pregnancy testing about one month after the medication abortion or a telemedicine visit based solely on patient symptoms. Both models had results comparable to an in-office follow-up visit.^{40,50,51}

Patients have also been turning to self-managed abortion due to difficulties with accessing local medication abortion. Online services use a no-test protocol with mifepristone and misoprostol for gestations up to 10 weeks, and consultations through the site are reviewed by a physician. People that use this service are given precautions for bleeding, pain, infection, and signs of ongoing pregnancy, as well as being advised to seek emergency care if needed.⁵² In the first month of the COVID-19 pandemic, one organization that provides self-managed abortions saw a 27% increase in requests in the United States, with more significant increases in states with either high COVID-19 rates or more strict stay-at-home orders.⁵³

The COVID-19 pandemic encouraged rapid adoption of novel, evidence-based strategies for convenient, patient-centered medication abortion services in the United States. These options have been safe and effective, provide improved access for patients, and support the physical distancing required by stay-at-home restrictions. The new services will likely continue to experience demand because they are based in evidence and allow patients to have an abortion in the privacy of their own home at a time that works best for them.

Beyond clinical care: Needed policy measures

Finally, while practices have been nimble in responding to new pressures during the COVID-19 pandemic, changes in clinical practice alone will not suffice to protect access to needed contraception and abortion care. Primary care practices will need to advocate for policy-level changes as a vital next step, particularly with regard to regulation and funding for reproductive health services. Additional policy-level initiatives, beyond pay parity in telemedicine, include permanently removing the REMS requirement for mifepristone, expanding the prescription of oral contraceptives by pharmacists, offering CHCs over the counter, expanding health insurance coverage of contraceptives, and passing the Women's Health Protection Act.

Mifepristone and the REMS

Permanent removal of the REMS requirement for mifepristone is a necessary step in promoting comprehensive reproductive health care. The REMS currently obstructs access not only to exceptionally safe early abortion, but also to evidence-based medical management of early miscarriage as well as highly effective emergency contraception.^{54,55} The unnecessary REMS status imposes cumbersome barriers for hospitals, providers, and patients; renders mifepristone functionally inaccessible; and forces patients to endure less effective clinical treatments.

Oral contraceptive prescription by pharmacists

Pharmacists are authorized to prescribe hormonal contraception in 13 states and the District of Columbia.⁵⁶ The prescription of oral contraception by pharmacists is well received by women⁵⁷ and appealing to pharmacists, 85% of whom reported being interested in providing hormonal contraception services.⁵⁸ Although the pharmacist prescription model has the advantage of decentralizing care and increasing access, it has not become widespread due to such barriers as staffing, liability, and training needs.⁵⁹ Notably, the innovation retains the barrier of requiring a prescription. The most streamlined version of the pharmacist prescribing model is PRJKT RUBY, a nonprofit organization offering online birth control and provider consultation, along with follow-up care and extended refills.⁵⁶ Pharmacies interested in prescribing oral contraceptives can find online support from Birth Control Pharmacist—a project offering online courses with continuing education credit to help pharmacies implement contraceptive services.⁵⁷

Over-the-counter oral contraceptives

National organizations such as the American Academy of Family Physicians, the American Medical Association, and ACOG previously endorsed over-the-counter oral contraceptives.^{55,59-60} Patients have found over-the-counter oral contraceptives to be convenient and desirable; evidence suggests that over-the-counter use of oral contraceptives is safe and may lead to improved continuation of effective contraception.⁶²⁻⁶⁴

During the COVID-19 pandemic and beyond, offering over-the-counter oral contraceptives could liberate patients from a restrictive model of care necessitating provider involvement, in favor of a more flexible and patient-centered approach.

Health insurance coverage of contraceptives

Contraceptive care has been recognized as an essential component of well-woman care, and all methods should be covered by all private and public insurances with little or no out-of-pocket cost.^{8,62} Coverage should include all traditional and innovative routes of administration and modes of delivery (e.g., self-administered DMPA SC, pharmacy-prescribed oral contraceptives, over-the-counter contraceptives, and online pharmacy services). All states should participate in Medicaid expansion under the Affordable Care Act, rendering basic health care and contraceptive services accessible to vulnerable populations.^{8,17} Funding for the federal Title X Family Planning Program—which provides comprehensive family planning and related preventive health services—should be sufficient to ensure that low-income women also have adequate access to contraception.^{8,17} Title X funding should include coverage of immediate contraception after surgical abortion.¹⁷

Women's Health Protection Act

Beyond specific policy changes supporting innovative contraceptive and abortion care delivery, more comprehensive change is needed at the national level to assure all patients have access to the reproductive health care they need, particularly those from communities that have been historically and contemporarily oppressed.

Congress must support legislation protecting these human rights and should pass the Women’s Health Protection Act, which is grounded in the fundamental tenets of Reproductive Justice. This act seeks “to protect a woman’s ability to determine whether and when to bear a child or end a pregnancy, and to protect a health care provider’s ability to provide reproductive health care services, including abortion services.”⁶⁵

Collectively, measures such as these will both improve care during the pandemic and provide long-term benefits to all women.⁶⁶ Primary care providers are natural patient advocates; extending that role to policy-level advocacy aimed to improve their patients’ lives and the quality of care they receive is a natural partnership.

Conclusions

The COVID-19 pandemic has disrupted routine clinical care, compelling providers to reexamine deep-rooted practice patterns in order to adapt to new pressures. This disruption resulted in the unintended yet fortunate consequences of moving practices in the direction of greater patient-centeredness and triggering the adoption of more evidence-based clinical practices.

Looking to the future, it will be important to sustain these new practice patterns and preserve the innovations that serve our patients well. For example, providers should forgo unnecessary practices that delay the initiation of contraception (such as requiring a pelvic exam, testing for STIs, or waiting until the patient’s next menses). Innovations in the delivery of contraceptive and medication abortion care are well studied and should continue to be implemented. These include DMPA SC self-administration, remote provision of CHC, no-test medication abortion, and telephone follow-up after medical abortion. All of these innovations and adaptations should remain within routine and recommended clinical standards of care.

Protecting access to reproductive health care is important in all communities, but especially so for those most vulnerable. Some of these innovations allow us to creatively address reproductive health inequities—for instance, by improving access through telemedicine for people with transportation or child care barriers. Nonetheless, we must remain alert to new disparities that arise as a result of these new models of care delivery. For example, while telemedicine may increase access for some, it may introduce new barriers for those who have limited access to technology or limited literacy in using it. Since much of reproductive health care remains essential even amidst the most stringent lockdowns, it is of critical importance for primary care providers to offer these services. It is in those moments of great crisis that marginalized communities are at risk of even greater reproductive health inequities.

As primary care providers, we must use the momentum of ingenuity to elevate other initiatives stymied by legal restrictions, competing priorities, or inertia. Supporting efforts to make oral contraceptives available over the counter and to remove the REMS restrictions from mifepristone has never been more critical.

COVID-19 has wrought devastation locally and globally, but has also provided new opportunities in health care. It is our obligation to use this opportunity to decrease barriers to reproductive health care access, increase the patient-centeredness of the care we provide, and promote and protect all of the tenets of Reproductive Justice.

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COVID-19 and Oral Health

Lisa Simon

Although integral to ensuring overall health and function, oral health care remains largely separate from the broader US health care system, and parallel to most primary care delivery. The separation between oral health and primary care is perhaps no better exemplified than in the response of dentistry to COVID-19. Adaptations in the dental care system throughout the pandemic have been largely driven by economic considerations more akin to those of other small business interests than to the broader health care system and public health response. Nevertheless, changes in infection control, patient testing and access, and mobile health platforms enacted during the pandemic have implications for the future of oral health and its relationship with the health care system from which it has been historically excluded.

A prepandemic snapshot of the oral health care delivery system

The origin of dentistry's separation from medicine has its roots in the establishment of the nation's first dental schools by physicians in the 1840s to 1860s. The bifurcated training path between physicians and dentists, producing separate practitioners, was followed by the independent development of medical insurance in the 1920s and dental insurance in the 1940s.¹ Unlike medical insurance, dental "insurance" was originally conceived as a discount plan, providing full coverage for lower-cost preventive procedures and decreasing levels of cost sharing for more expensive interventions, a model that persists today. The 1965 passage of Medicare and Medicaid, both of which initially excluded dental coverage, facilitated a financial system of dental delivery disconnected from larger health systems and reimbursement structures.^{2,3}

The separation of dentistry from medicine had lasting implications for the practice of dentistry in the United States. As of February 2020, the average general dentist worked in a solo private practice or with a few other dentists and fewer than five employees.⁴ Dental specialists, such as orthodontists, endodontists (dentists with a specialty in performing root canals), and periodontists (dentists with a specialty in the gingiva) were even more likely to work in private practice. While consolidation has occurred in dentistry, with a relatively high rate of increase in the number of

large-group dental practices (analogous to similar consolidation within the medical system), such practices still make up a small minority of all dental practices and most continue to operate in a private practice, business-ownership model.^{5,6} Only about 2% of the nation's 200,419 dentists worked in a public health setting such as a Federally Qualified Health Center, correctional facility, or tribal clinic, and even fewer, less than 1%, practiced in integrated settings with other health care providers, such as a hospital.⁷

Before the pandemic, fewer Americans visited a dentist than other health providers each year—while 84.3% of adults visited a medical clinician in 2018, only 64% had a dental visit.⁸ Almost four times as many Americans lacked dental insurance as lacked medical insurance, as 73.5 million Americans lacked dental insurance in 2018. Nearly half of the population was enrolled in a private dental plan, while 23% received benefits through public insurance, predominantly Medicaid.⁹ Though Medicaid and the Children's Health Insurance Plan (CHIP) are required to provide comprehensive dental benefits to all low-income children through the Early and Periodic Screening, Diagnostic and Treatment (EPSDT) mandate, dental coverage for Medicaid-enrolled adults is elective and varies at the state level. Twelve states provide only emergency coverage (e.g., tooth extraction for severe dental infection), while 35 offer a broader scope of services; however, extent of coverage, mandated copays, and annual coverage maxima vary considerably among states.^{10,11} Small increases in rates of dental coverage in the five years prior to the COVID-19 pandemic were largely driven by expanded adult dental coverage through Medicaid expansion due to the Affordable Care Act.¹² Traditional Medicare offers no dental coverage, and only 12% of Medicare beneficiaries have dental coverage, mostly through Medicare Advantage plans that include dental benefits (and with the minority purchasing a stand-alone dental benefit plan).^{2,13} Regardless of payer, almost the entirety of dental care in the United States is funded through a fee-for-service model.

Dental insurance is not a guarantor of access to dental care, with more Americans reporting financial concerns as a barrier to dental access than for other forms of health care.³ Because dental insurance is typically structured as consumer discounts, rather than indemnity coverage for unanticipated expenses, a “paradox of dental need” has been described, in which patients with the most intensive oral health needs are the least able to afford treatment.¹⁴ Older adults, the population least likely to have dental insurance, spent an average of \$900 out of pocket per year on dental needs.¹³ Low dentist participation rates in public insurance programs across the nation can make access challenging even when dental coverage exists. For example, in 2018, 80% of children from families living below 200% of the federal poverty level had an annual dental visit, compared to 91% of those making 400%.¹⁵

The traditional structure of dental delivery and fewer pressures for innovation than the rest of the primary care system have resulted in profound inequities in oral health outcomes. Black, Latinx, and American Indian and Alaska Native children and adults all have higher rates of untreated dental disease than white Americans.¹⁶ High-risk groups including rural dwellers,¹⁷ people with disabilities,¹⁸ people with a history of incarceration,¹⁹ people with chronic medical conditions,^{20,21} and institutionalized older adults²² all face reduced dental access and poor outcomes. With minimal dental coverage available to many low-income adults, income remains

an unjust predictor of oral health, with individuals living below the poverty line many times more likely to lose all their teeth.^{23,24}

A landmark 2000 report from the US surgeon general served as a call to action to address oral health inequities, and prompted two decades of increased attention to oral health as an important component of overall health.²⁵ Precedent-setting innovations that enhanced care coordination and integration, such as the patient-centered medical home movement²⁶ and initiatives to integrate behavioral health and primary care,²⁷ were adapted to pilot innovative forms of dental integration into the primary care settings through colocation of dental and medical services, task sharing between medical and dental providers, and interoperable electronic health records.²⁸⁻³¹ These initiatives received additional support from an Oral Health Strategic Framework at the US Department of Health and Human Services from 2014 to 2017, which affected funding priorities throughout the department.³² A follow-up to the 2000 report was planned for late 2020, but its release has been pushed back to 2021 due to the COVID-19 pandemic.

Limited evidence from these pilot projects and observational analyses of claims data suggest that the integration of oral health into primary care delivery and coverage may result in reduced health care costs and improved health outcomes;^{33,34} however, overall evidence in favor of care integration on the basis of systemic health impacts remains minimal, with several clinical trials finding no benefit to health outcomes after treatment for periodontal disease.^{35,36} Preliminary findings have been insufficient to drive more definitive integration, particularly in the face of resistance from organized dentistry. Few accountable care organizations include dental care, and those that do generally fund dental treatment as a fee-for-service “carve-out” service, rather than as a component of bundled care.^{37,38} Lack of widespread adoption of diagnostic codes within dentistry, as well as absent use of patient-centered outcomes, also impairs the development of effective dental quality measures, further slowing the shift toward value-based care from the fee-for-service model.^{39,40}

Oral health and primary care integration may be more advanced in safety-net and academic settings. Federally Qualified Health Centers, which often have colocated medical and dental services, have developed workflows to enhance bi-directional referral and oral health screening.^{41,42} Public health settings, especially those on sovereign tribal lands, were also pioneering in the adoption of advanced practice dental practitioners known as dental therapists, an expansion of the dental team facing strenuous opposition by most private practice dentists.⁴³ As interprofessional education is a mandated competency for dental schools as well as multiple other health professions’ educational institutions, clinical and didactic interprofessional training incorporating oral health occurs at academic institutions across the country.⁴⁴⁻⁴⁶

Unfortunately, however, these innovators made up a very small proportion of the dental delivery system. Thus, at the start of the COVID-19 pandemic, the vast majority of dental care provision took place within a “cottage industry” of small business owners collecting fee-for-service reimbursement directly from consumers, with limited access for many vulnerable populations.

Care transitions and closures in the early pandemic

Early epidemiology on the COVID-19 risk to health care workers suggested that dental practitioners were at elevated risk due to high rates of aerosolization in dental treatment.⁴⁷ As COVID-19 spread throughout the nation, practice recommendations quickly evolved during an initial period of uncertainty. In Massachusetts, for example, a March 6 communication to dentists from the Department of Public Health encouraged providers to continue normal care and stated: “The risk for COVID-19 in the Commonwealth remains low; the risk for the flu is high” (personal communication, Massachusetts Department of Public Health, March 6, 2020). By March 16, however, the American Dental Association (ADA) had released national guidance recommending all elective dental care be deferred for three weeks—recommendations echoed by most state departments of public health.⁴⁸

Although initially planned as a three-week pause in dental care, the closure of the dental industry persisted for eight or more weeks across the country, depending on the length of shutdown at a state level. Starting the week of March 23, the ADA’s Health Policy Institute began sending waves of polling on the effect of the pandemic to more than 70,000 ADA member dentists, garnering more than 19,000 responses each week.⁴⁹ While the respondents, like the ADA’s membership, disproportionately represent small-business-owner dentists, these waves of polling nevertheless provide an in-depth depiction of dental practice changes throughout the pandemic. By April 2020, 95% of respondents had shuttered their practices; although most were providing some emergency care, almost 20% were not providing any care at all, despite such a decision being a violation of the ADA’s Code of Ethics.⁵⁰ By mid-April 2020, 45% of dentists had also furloughed all staff.⁴⁹

Dental practices were also affected by pandemic legislative changes that applied to the broader health care system. The Coronavirus Aid, Relief, and Economic Security (CARES) Act provided multiple funding opportunities for dental providers. More than 90% of dentist respondents indicated they had applied to the Paycheck Protection Program, and almost 60% to the Economic Injury Disaster Loan program.⁵¹ Dentists also qualify for funding from the Provider Relief Fund with looser restrictions than other providers; they are eligible independent of whether they accepted any public or private insurance in the past.⁵² Rates of program application were the same among dentists who cared for Medicaid beneficiaries and those who did not.⁵¹

The Office of Civil Rights’ relaxation of the Health Insurance Portability and Accountability Act (HIPAA) to allow telehealth to be practiced on a broader variety of platforms also applied to dentists.⁵³ Previously, only California’s Medicaid program had reimbursed providers for the use of two specific teledentistry codes; amidst the pandemic, public and private insurers began reimbursing six codes from the Code on Dental Procedures and Nomenclature (CDT Codes), including a problem-focused examination, with the goal of supporting telephone- or video-based triage of patients experiencing dental emergencies.⁵⁴ Nonetheless, fewer than a quarter of private practices reported billing with teledentistry codes.⁵⁵ This may have been a result of relatively low reimbursement rates for these nonprocedural visits, which may have prevented the provision of such care from being financially viable. The low rates may also

reflect lack of public awareness that dentists could be accessed and could help assist patients (such as through evaluations and recommendations that require only a video-based exam) through this mechanism.

Public health dental settings faced a different set of economic pressures. Dental clinics in Federally Qualified Health Centers and their “look-alikes” (clinics not officially federally qualified but having similar features) have often had slim financial margins that challenge sustainable dental delivery for at-risk populations. Dental department losses due to low reimbursement rates from public insurances and the cost of dental equipment and materials were often supported by more favorable margins from medical services within the health center.⁵⁶ During the pandemic, however, patient visits at health centers across the nation declined precipitously. Ten percent of health center dentists were furloughed through May.⁵⁷ To avoid furloughing dental staff, several health centers redeployed them to COVID-19 testing or to call center work.⁵⁸ Likely because health centers treat patients with higher rates of unmet dental needs who require emergent management, overall patient volume dropped less precipitously in health centers than in private practices during the first months of the pandemic.⁵⁷

Besides private offices and public clinics, another major source of dental care was also dramatically affected by COVID-19. Prior to the pandemic, many patients without access to dental care presented to hospital emergency departments for dental care, generating more than 4 million visits per year (more than 1.5% of all emergency department visits).⁵⁹ Patients presenting to the emergency department are disproportionately young, diagnosed with multiple comorbidities, and uninsured or publicly insured.⁶⁰ Ironically, dental treatment is generally not available in emergency departments, with most patients receiving a prescription for an antibiotic and opioid along with a recommendation to visit a dentist.⁶¹ Emergency department visits for dental problems declined during the early months of 2020 during the COVID-19 pandemic, and those patients who did present to the emergency department had more serious infection and were more likely to be admitted to the hospital.^{62,63} An analysis of utilization and visits in the Boston area found that daily dental emergency department visits were halved from February to April of 2020.⁶⁴ Rather than consisting of patients who no longer had access to their routine sources of dental care during this period of dental practice closure, patients visiting the emergency department for a dental problem during the early pandemic were still more likely to be uninsured or a beneficiary of Medicaid. Given that fewer than 50% of patients who visited the emergency department for a dental problem were able to see a dentist within six months of their index emergency department visit, it is unknown how these trends impacted unmet dental needs and access to oral health care in the population.⁶⁵

The rapid recovery of the dental industry

Although dental practices faced some of the most abrupt closures during the early phases of the pandemic, resumption of dental practice also occurred with greater speed than elsewhere in the health care system. Dentistry represented 35% of all health care jobs lost (which represented 2.4% of all jobs lost) in March and April 2020, yet 10% of *all* new jobs generated by the economy in May 2020 were in the dental industry.⁶⁶ By the end of June 2020, 86% of

dental practices had reopened for business, and more than 50% reported they were practicing “business as usual” by July 13, 2020.⁴⁹ Even as COVID-19 continued to spread, and with transmission rates higher than earlier in the pandemic, by September 21, 2020, 79% of dentists nationwide were reporting patient volumes of 75% or greater of their prepandemic baseline.⁴⁹

While patient volumes in September 2020 were comparable to the volumes observed among primary care practices (which stabilized in June 2020 at about 10% lower than prepandemic levels), the dental visits were occurring entirely in person and were procedural in nature, rather than via telehealth.⁶⁷ Dentistry’s technical demands and level of occupational exposure and risk were more comparable to that of ophthalmology, which—by contrast with dentistry—experienced an 81% reduction in volume by May 2020.⁶⁸

The successful reopening of dentistry was due to a concerted effort by individual providers and organized dentistry representatives. In August 2020, the ADA released an interim policy on “Dentistry as Essential Health Care,” drawing direct parallels to frontline health care workers to incent state governments to allow dental practices to reopen with fewer restrictions than other industries.⁶⁹ The dental industry emphasized, in consumer-facing literature, that receiving dental care was safe despite COVID-19. Consumer polls in late August 2020 found that 80% of respondents felt safe having a dental visit.⁷⁰

Despite the move toward reopening, dental practice itself changed considerably. The increased cost of personal protective equipment (PPE) sufficient to prevent COVID-19 transmission (especially during highly aerosol-generating procedures such as those using a dental handpiece), as well as the added turnover time required for additional antiviral agents to air-dry between patients, reduced capacity and profit margin across dental practices. Some insurers temporarily agreed to reimburse dentists for “PPE fees” to reflect higher costs of operative dental care during the pandemic, at per capita rates of \$7–\$10 per encounter.⁷¹ Yet consumers balked at the prospect of having such costs passed on to them.⁷² In New York state, the Department of Financial Services notified dental practices that directly charging consumers such fees may violate insurance contracts.⁷³

Changes in practice standards for PPE utilization have precedent in the early human immunodeficiency virus (HIV) epidemic of the 1980s. After a period of uncertainty and fear about appropriate infection control,⁷⁴ and a highly publicized case of HIV transmission from a dentist to several patients, consensus evolved to develop the set of “universal precautions,” including gloves, masks, and disposable gowns that became standard practice.⁷⁵ The US Centers for Disease Control and Prevention recommendations for dental providers—which included wearing an N95 mask and goggles or a face shield during all clinical encounters—represented an evolution of universal precautions.⁷⁶

Adoption of even more costly infrastructural changes to reduce transmission remains debated, with limited evidence to support their use.⁷⁷ Nonetheless, some practices have advertised adoption of technology such as high-efficiency particulate air (HEPA) filters or ultraviolet ionization to highlight safety in dental care. State-level requirements also vary; for example, the state of Pennsylvania initially mandated dental care occur only in negative pressure rooms, a physical alteration that was unaffordable for many practices and clinics.⁷⁸

Early evidence suggests that dental care provided with adequate PPE and risk reduction is fairly safe; a dental clinic in Wuhan, China, during the early height of the pandemic provided care without any evidence of intraoperative viral transmission.⁷⁹ Early results from the United States show a rate of COVID-19 transmission among dentists that is lower than among the general population.⁸⁰ Nevertheless, although domestic regulators and the ADA have encouraged patients to return to the dentist, the World Health Organization continues to recommend against routine dental care.⁸¹

One dental setting has been more dramatically impacted than others: school-based dental clinics that serve as a highly cost-effective setting for the delivery of preventive oral health services to children.⁸² Many school-based dental clinics also identify and refer children with more severe untreated dental disease for prompt treatment. With many school districts operating remotely, school-based dental clinics were not available to the many thousands of children each year who receive care through these programs.⁸³ Such programs disproportionately benefit low-income children who have higher rates of dental decay and may otherwise have reduced access to dental care in the community.⁸²

Although the impact of COVID-19 on dental delivery has been well documented, its impact on oral health is still poorly understood. Though rates of dental disease progression are based on multiple biological and personal risk factors, some patients who could not access care during the months-long period of closures may ultimately need more costly and invasive dental treatment once care is accessible. This may be especially true for those patients who would otherwise have visited an emergency department but chose to stay home despite experiencing acute dental pain. Anecdotally, during COVID-19 dentists have reported a higher observed incidence of stress-related oral conditions, such as fractured teeth and temporomandibular joint pain related to bruxism.^{49,84} Procedures required to treat more advanced disease, like root canals and dental implants, which are less likely to be covered by dental insurance than preventive procedures or basic treatments like fillings, represent a substantial out-of-pocket cost to patients. These procedures may be unaffordable for more vulnerable patients, who are already more likely to present to care with more severe dental problems.³ Deferred care may also have economic implications in the form of increased time away from work or school.⁸⁵

Looking forward: Will enduring change come to dentistry?

During the early months of the COVID-19 pandemic, when most dental care came to a halt, many commentators saw the potential for radical change in dental practice, particularly in aligning the field more fully with other forms of health care delivery. Yet more than any other health care industry, dentistry has been able to successfully resume its traditional model of care delivery, and it appears many of the changes to dentistry foreseen at the beginning of the pandemic have not borne out.⁸⁶ Yet even the relatively less dramatic changes seen in dental care as a result of COVID-19 may affect practice patterns and access to health care services for millions of Americans.

First, dental practice and reimbursement may evolve as a result of changes in infection control. Despite the efficacy of nonoperative models of dental care, dentistry remains a largely

interventional field. Many of dentistry's most aerosol-generating procedures, such as drilling a tooth and placing a filling, could be avoided with a medical model of oral health care. Prevention-focused models like routine fluoride varnish application and personalized risk management, as well as less-invasive treatment such as arresting active tooth decay with silver diamine fluoride, may become more widespread if the health and economic cost of performing aerosol-generating procedures persists.

A shift toward preventive and away from procedural services may garner support if outcomes-driven reimbursement expands, partially or completely replacing the current predominantly fee-for-service model that organized dentistry in the United States has defended to date. Due to the increased cost of PPE to prevent COVID-19 transmission, and lower patient volumes during the pandemic, dentists may find capitated or quality-based payment models allow them to remain profitable while providing more preventive care than before the pandemic.

Next, infection risk reduction may prompt better information transfer between medical and dental settings. Several dental facilities now require a negative COVID-19 PCR test before treatment; however, such a requirement is only feasible in settings that allow for convenient referral and results sharing between testing sites and dental providers, such as academic medical centers and community health centers.⁸⁷ These settings provide a small minority of clinical dental care. With few exceptions, electronic dental records are not interoperable with electronic medical records, making information about patients' COVID-19 testing history, infection, or vaccination status inaccessible to dental providers.⁸⁸ There has previously been limited incentive to improve interoperability, but demand may evolve with changing patient and provider safety protocols.

As before the pandemic, the potential for enhanced integration as a direct result of COVID-19 faces resistance from dental providers themselves. Although historical precedent exists from the 2009 H1N1 outbreak for vaccine administration by dentists,⁸⁹ less than half of dentists reported they would consider administering a COVID-19 vaccine in their office.⁵¹

Broader policy changes may impact access to dental care. With 12.6 million people newly unemployed in the United States during the COVID-19 pandemic, loss of employer-sponsored dental insurance may lead to increased rates of unmet oral health needs.^{90,91} Expanded Medicaid enrollment of the newly unemployed will place additional budget constraints on state governments that may lead to reduction in Medicaid dental benefits.⁹² Similar changes occurred in the wake of the 2007 financial recession, resulting in higher rates of dental-related emergency department visits and hospital admissions in the 19 states that cut or limited benefits.⁹³⁻⁹⁵

Ultimately, the COVID-19 pandemic reinforced the market and health system drivers of dental delivery in the United States that make dental care in the United States unique relative to the rest of the health care sector. Practice closures affected dental access in the short term, and subsequent economic pressures may affect dental access and oral health in the long term through the cost of dental delivery and availability of dental insurance coverage. However, the COVID-19 pandemic has not served as a catalyst for the radical changes that would result in a more integrated and equitable system of oral health care. In subsequent chapters, authors will more fully explore the potential for these changes to take root, and address the core inequities propagated and reinforced by the traditional model of dentistry in the United States, a model that COVID-19 impacted but could not disrupt.

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Addressing Food Insecurity Among At-Risk Older Adults

Lynda Flowers and Olivia Dean

Food insecurity—the lack of consistent access to healthy foods due to insufficient resources—has been a long-standing problem among older adults, and the COVID-19 crisis is making the problem worse.^{1,2} Among adults ages 50 and older, food insecurity has increased by an estimated 60% during the pandemic.³ Older Black and Hispanic/Latino adults experience food insecurity at over twice the rate of their White counterparts, an issue rooted in structural racism (Figure 1)—a system in which laws, policies, practices, and other norms work to reinforce racial inequities. Food insecurity is associated with chronic diseases such as diabetes mellitus, which disproportionately impact Black and Hispanic/Latino populations and are risk factors for serious illness from COVID-19.⁴

Because social factors like lack of access to needed food are significant drivers of health inequities, it is important for primary care providers to consider them when delivering care to all older adults, especially those who are most at risk for food insecurity. Addressing patients' medical and social needs is an important step toward improving health outcomes and reducing disparities. The most impactful change, however, will come when clinicians and other parts of the health system work to address the societal structures that create and perpetuate health inequities.

In this chapter, we describe how food insecurity impacts the health of older adults, how the COVID-19 pandemic has impacted older adults' food security, and some of the factors that may help address food insecurity among older adults during and after the pandemic. We propose several specific actions that primary care providers can take, both within their field and with other groups, to address food insecurity among older adults, emphasizing the importance of addressing root causes of food insecurity in the United States.

Food insecurity negatively impacts older adults' health

Lack of reliable, consistent access to healthy food poses significant health risks for older adults. As people age, their immune systems weaken, increasing their risks for illness.⁵ Food insecurity deprives individuals of essential nutrients and further diminishes their ability to maintain a healthy

immune system. In addition, being food insecure is associated with a number of chronic health conditions among older adults—including diabetes, asthma, and congestive heart failure. Inconsistent calorie intake or intake of calorie-dense, cheaper, processed foods to satisfy hunger can contribute to chronic metabolic and inflammatory changes that trigger or worsen these chronic conditions.⁶ In turn, these conditions, which disproportionately impact communities of color, are risk factors for serious complications from COVID-19.⁷

Food insecurity can also diminish a person's ability to perform activities of daily living (e.g., dressing and bathing) and worsen existing health conditions or make chronic conditions more difficult to manage.⁶ With limited financial resources, food-insecure older adults make decisions that are harmful to their health, such as not taking medications as prescribed and postponing or forgoing needed medical care to save money for food.

How the pandemic is increasing food needs among older adults

The COVID-19 pandemic has led to increases in food insecurity among older adults, especially among Black and Hispanic/Latino older adults (Figure 1). Widespread job loss is likely one of the largest reasons for this increase. Temporary loss of access to congregate meal programs, increases in food prices, and long-standing underuse of federal nutrition benefits also contribute to the problem.

Increased unemployment

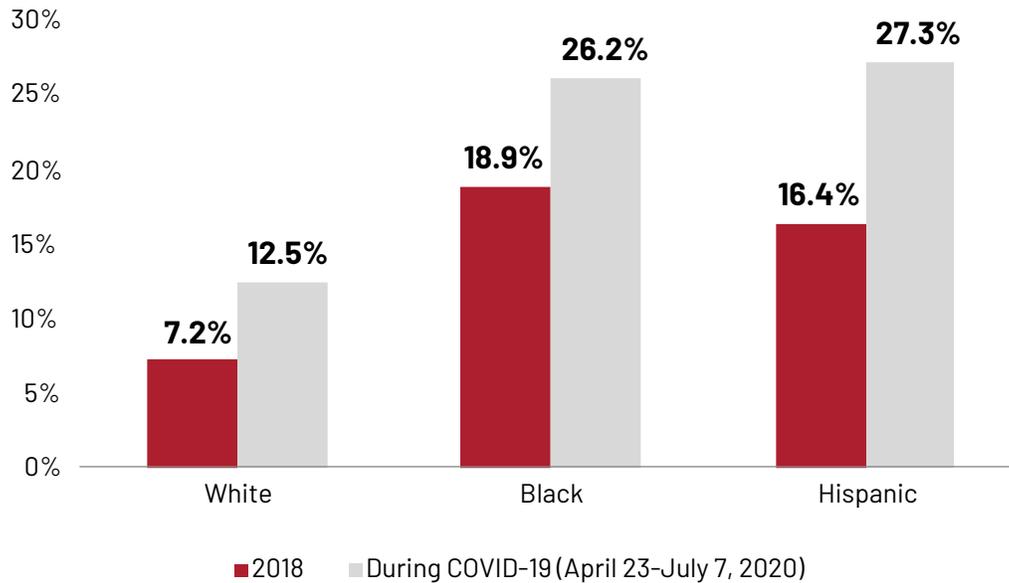
The COVID-19 pandemic has had a disproportionate impact on job and wage loss among Black and Hispanic/Latino older adults. Between March and April 2020, unemployment rose sharply among adults ages 50 and older, with Blacks and Hispanics/Latinos experiencing higher rates of unemployment than their White counterparts (Figure 2). Among older Hispanics/Latinos, the unemployment rate rose by 13 percentage points compared to 9 percentage points among older Whites, exacerbating an already-existing unemployment gap. Unemployment rates fell among older adults between April and September 2020, but the racial and ethnic unemployment rate gap widened, and overall unemployment remained elevated compared to before the pandemic.

Temporary closure of congregate meal programs

The Older Americans Act (OAA) passed by Congress in 1965 authorized the provision of healthy meals in congregate settings to adults ages 60 and older and their spouses of any age. The primary goals of the OAA include improving nutritional status, alleviating food insecurity, promoting socialization, and supporting overall health and well-being. The OAA enables congregate meal programs to provide meals in a variety of community-based venues and targets those with the greatest need: low-income people of color, those with limited English proficiency, people living in rural areas, and those at risk of needing institutional long-term care.⁸

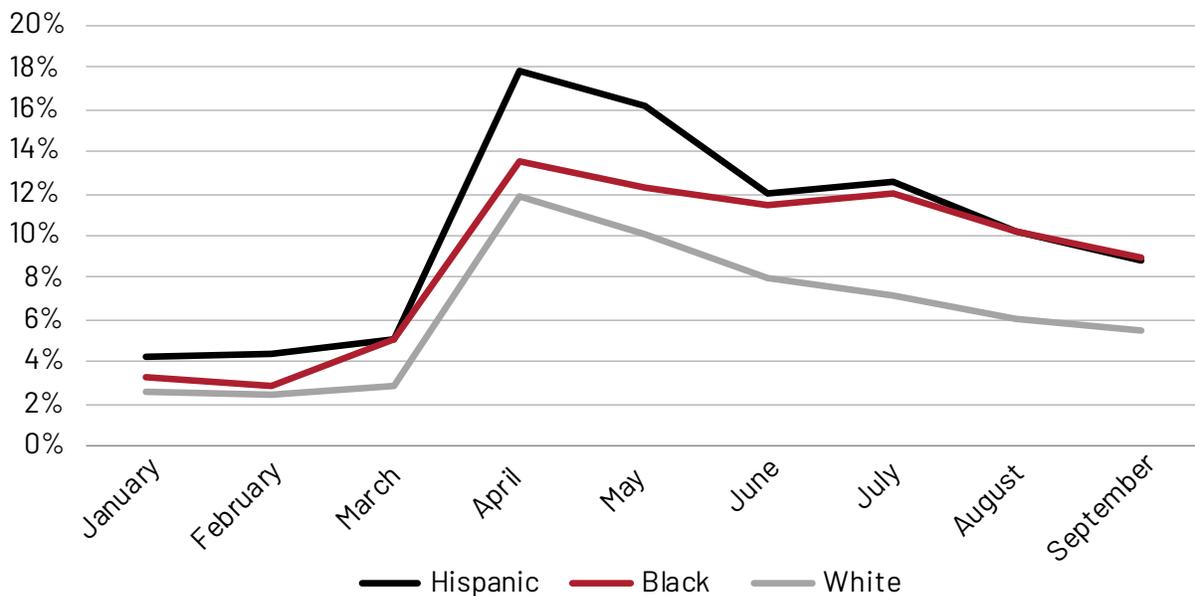
In 2018, congregate meal programs provided more than 71.5 million meals, including meals tailored to people with diabetes, to more than 1.5 million (or 2%) of adults ages 60 and older.⁹

Figure 1. Food Insecurity Prevalence Among Adults Ages 50 Years and Older in the United States, 2018 vs. 2020



Calculations by Schanzenbach and Pitts from the Current Population Survey and the Census Pulse Survey.

Figure 2. Unemployment Rate Among Adults 50 Years and Older by Race/Ethnicity in the United States, 2020



Data derived from AARP Public Policy Institute analysis of 2020 Basic Monthly Current Population Survey.

Most participants were 75 years and older and lived alone.¹⁰ For many, receiving a meal in a congregate setting accounted for a significant portion of their daily food intake, with 57% of participants reporting that a single meal provided one-half or more of their total daily food intake.¹¹ In addition to providing a significant source of nutrition, participants in congregate meal programs were less likely to be hospitalized or have emergency room visits than similar older adults who did not participate in the program.¹⁰

The onset of COVID-19 led many congregate meal sites to temporarily close their doors in response to federal social distancing guidelines. While such guidelines were important for slowing the spread of the virus, the meal site closures deprived many at-risk older adults of a significant source of healthy food. To help fill the void, many state and local Area Agencies on Aging—which administer congregate meal programs—have partnered with local volunteers to provide “grab-and-go” and home-delivered meals to older adults who previously received meals in congregate settings. While these efforts are critical, more financial resources are needed for meal providers to fully meet the growing need.¹¹

Increasing food prices

Rising food prices during the pandemic also threaten the food security of low-income older adults. Between March and June 2020, overall food prices at supermarkets and grocery stores increased 4.3%.¹² The price increase was partly driven by beef prices, which grew 20%. Factors contributing to price increases included demand shocks as people feared shortages and stockpiled food, breaks in supply chains as processing plants shut down due to COVID-19 outbreaks, and higher demand for groceries as people shifted from eating at restaurants to eating at home.¹³ In a June survey, half of low-income older respondents reported being worried about rising food prices, and 43% expressed concerns about not having the money to pay for needed food.¹⁴ While food prices have decreased slightly at the time of this writing in October 2020, prices continue to remain higher than they were one year ago.¹⁵

Low-income older adults receiving benefits through the Supplemental Nutrition Assistance Program (SNAP)—formerly known as food stamps—may be particularly vulnerable to the impacts of higher food prices. The US Department of Agriculture calculates SNAP benefit allotments using the Thrifty Food Plan (TFP), a minimal-cost food plan based on “a national standard for a nutritious diet at a minimal cost.”¹⁶ Despite its definition, the TFP is insufficient to meet actual food needs.¹⁷ Thus, large increases in food prices could make it even harder for SNAP enrollees to stretch their modest allotments to meet their food needs.

Long-standing underuse of SNAP

SNAP is the nation’s largest anti-hunger program, helping millions of Americans purchase food, including 8.7 million low-income households with adults ages 50 and older in 2018.¹⁸ The program is proven to reduce food insecurity, is associated with improved health, and is designed to expand during periods of increased need, such as the current COVID-19-related economic downturn.

As successful as SNAP is at addressing food insecurity, enrollment in the program has been historically low among older adults. Prior to the pandemic, about 52% (5 million) of adults ages 60 and older who qualified for SNAP were not enrolled in the program.¹⁹ Low-income older adults face barriers to enrollment such as lack of awareness about SNAP, misconceptions about program rules, and a burdensome application process.²⁰ Fortunately, the federal government has temporarily suspended the face-to-face interview and renewal requirements during the pandemic.²¹

Another barrier to SNAP enrollment is the belief that the benefit level is so low that it is not worth the effort to apply. Although the federal minimum benefit amount is quite low at \$16 a month, the average monthly benefit received by households with adults ages 50 and older was actually \$144 in 2018.¹⁸

Finally, stigma around receipt of public benefits can keep some eligible older adults from applying for SNAP. Efforts to overcome stigma can include streamlining enrollment processes, correcting misperceptions about the program, and widely disseminating positive messages and images that demonstrate the program's value.

An expanded role for primary care in supporting food security among older adults

Primary care providers and their office staff can play an important role in helping food insecure older adults access the food they need to stay healthy. They are often older adults' main and most-consistent point of contact with the health care system, offering an important opportunity to address clinical and social needs. Knowing whether patients lack access to adequate amounts of healthy food can lead to interventions that improve nutritional status and chronic care management. As primary care providers consider a larger role in helping to alleviate food insecurity and food insecurity disparities among older adults, here are a few things they should consider.

Incorporate food insecurity screening and referral into the workflow

Increasingly, primary care practices are addressing patients' food needs through food insecurity screening and referral. Broadly, this means using a validated tool to systematically screen patients and connect those who are food insecure to resources such as food banks. Although growing in popularity, food insecurity screening and referral is still not the norm in primary care. Barriers to screening include lack of organizational commitment, lack of knowledge about screening tools and how to use them, perceptions that screening is too time-consuming, not knowing how to deal with positive screens, and uncertainty about the impact of screening on the provider-patient relationship.²² These barriers, however, are not insurmountable. The AARP Foundation has developed a useful resource guide for implementing food security screening and referral for older patients in primary care.²³

Primary care providers face competing demands on their time and resources, and organizational leadership may not view food insecurity screening among older adults as germane to

the provider role. A case can be made to leadership that integrating food insecurity screening and referral into workflows could reduce provider burden and may lead to improved patient outcomes and ultimately cost savings for practices.²⁴

Simple but effective screening tools are available depending on the goals of the practice and are easily incorporated into electronic health records platforms. If the goal is to screen only for food insecurity, Hunger Vital Sign is a validated two-question instrument that can be administered verbally or in writing.²⁵ Another tool, Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE), contains 15 questions that measure a range of social and economic risk factors, including food insecurity. Available in 26 languages, PRAPARE takes about nine minutes to administer.²⁶ Practices should consider using waiting-room time to field screening tools.

During the pandemic, primary care providers can screen and refer through telephonic or video visits with patients. Providers who find this approach effective may want to continue the practice post-pandemic. Providers may test other methods of screening and referring food-insecure older adults, including text messages, emails, and chatbots (computer programs that simulate conversation). Any method used should be culturally competent, ensure patient privacy, and be evaluated for effectiveness and patient satisfaction. Chosen methods should also be consistent with patient and family caregiver preferences.

The process should not end at referral; primary care providers should use the results to make decisions about medical care and follow up with food-insecure patients to ensure they are getting the help they need. Continually tracking and monitoring progress, including the number of referrals to various resources as well as referral outcomes, is important for improving patient outcomes. Training should be available for medical assistants and other office staff to help with these processes.

Build and nurture trust with patients and family caregivers

Patients are more likely to discuss sensitive personal issues in an atmosphere of trust. When it comes to food insecurity, older adults may feel shame or discomfort about not being able to afford food or may be suspicious of provider motives for asking sensitive personal questions.²⁷ In addition, the COVID-19 pandemic has brought a host of new challenges that can make trust building difficult. For example, patients and caregivers may be receiving mixed messages about risk factors for the virus and how to protect themselves.

Mistrust of the medical system is particularly profound among Black and Hispanic Americans, who are reeling from the disproportionate impacts of COVID-19 on the physical, mental, and economic health of their communities. A recent national poll found that over half (55%) of Black Americans mistrust the health care system, 70% of Black and 43% of Hispanic Americans believe the medical system treats people unfairly based on their race or ethnicity, and more than 20% of both Black and Hispanic Americans say they have difficulty finding a clinician who treats them with dignity and respect.²⁸ On a systemic level, examples of factors that continue to contribute to mistrust include underrepresentation of Blacks and Hispanics in clinical trials, denied access to the most beneficial treatments, and health providers' implicit or explicit bias.

The aforementioned national poll also found that 28% of Black Americans prefer to be treated by Black clinicians, but there are not enough to meet the need. Thus, it is especially important to build trust where there is a lack of racial/ethnic and/or language concordance between patients and providers.²⁹ Providers should be knowledgeable about the medical system's historical and ongoing harms to people of color, as well as regularly participate in trainings on explicit and implicit bias, cultural competence and humility, and anti-racism. Organizations should find ways to ensure that such trainings result in tangible results.

Examples of trust-building strategies include limiting interruptions and distractions during the visit, making eye contact with patients, taking patients at their word, respecting patients' right to make their own choices, not making assumptions about the patient, admitting and apologizing for mistakes, and checking in with patients to validate information about their care.³⁰ Ensuring patient privacy, offering screening in a patient's preferred language, and being mindful of literacy levels are important for trust building as well.³¹ Screening every patient who comes in to the practice for food insecurity may also help normalize the process and reduce stigma. In the long term, relationship building may increase the efficiency of the visit as patients become more comfortable and providers can easily obtain the information they need to help patients best manage their care. Trust promotes care-seeking behaviors, patient honesty, and adherence.³²

Build strong community partnerships

Providers should develop and nurture strong community-based partnerships that can help them address food insecurity, as well as other social and economic issues that contribute to health disparities among their older patients. Effective community partnerships leverage the strengths of each partner to achieve agreed-upon goals. They also help partners understand issues and solutions from a variety of perspectives. Though they take time to develop and maintain, such partnerships are well worth the effort.³³

In the context of food insecurity, community partners can provide information and training to providers that can help them connect older adults to appropriate food resources. Provider organizations and individual providers can also work with community partners to link older adults to needed services, like housing and energy assistance programs. Potential community partners include Area Agencies on Aging, anti-hunger advocacy groups, relevant minority organizations, food banks, senior centers, social service agencies, local philanthropies, and other entities.

While primary care providers can partner directly with community organizations, it may be useful to contract with an intermediary organization that can help build and maintain community relationships. For example, the Center for Medicare and Medicaid Innovation's Accountable Health Communities is currently testing a five-year model that funds "bridge organizations" to partner and coordinate with clinical delivery sites and community-based organizations to conduct social-needs screenings and referrals—including for food insecurity—among Medicare beneficiaries who are also eligible for Medicaid.³⁴ Providers and provider organizations can take advantage of value-based payment models and savings from risk-based managed care to hire intermediary organizations to connect their practices to community resources and help facilitate community partnerships.

Work to dismantle structural racism

While primary care physicians play an important role in addressing patients' clinical needs, health is primarily determined outside of the clinical setting, with underlying social conditions driving up to 80% of health outcomes.³⁵ In turn, these social conditions are perpetuated by systems of structural racism that support an environment that results in significant disparities in food insecurity. For example, policies and practices that result in segregated communities, income inequality, and barriers to wealth accumulation all contribute to disparities in access to resources needed to purchase healthy foods. Health systems and clinicians who hold biases and engage in discriminatory practices also contribute to health disparities, including disparities in food insecurity. Health systems and individual practices should take steps to redesign their organizational structures to optimize their ability to address social needs, reduce health disparities, and tackle the structural barriers that promote them.

Primary care providers, their membership associations, and managed care organizations have a responsibility to independently and collectively advocate for policies designed to chip away at the systemic barriers that contribute to food insecurity and health inequities, including racism. The codes of ethics for the National Black Nurses Association and the American Nursing Association require nurses, including independent nurse practitioners, to advocate for patients' rights and to engage in efforts that promote social justice. Similarly, the American Medical Association calls for physicians to advocate for social, economic, and political changes that contribute to human well-being.

Clinicians and support staff can meet these responsibilities by advocating for policies that increase their ability to address social needs, including payment reforms that support integrated health and social care delivery systems. Provider membership associations and managed care organizations can take the lead in making advocacy training widely available to providers. Incorporating individual primary care professionals in their ongoing lobbying efforts can help these professionals gain advocacy expertise. Health care professionals sharing their knowledge and patient stories with policymakers can be incredibly valuable and may impact policy change.

Conclusions

The COVID-19 pandemic has worsened food insecurity among all older adults, with Black and Hispanic/Latino older adults suffering disproportionate harm. With increasing numbers of older adults struggling to put food on the table, it has never been more important for providers to recognize the impact that food insecurity has on health and health disparities and to make efforts to address patients' nonmedical needs alongside their medical needs.

Advancing health equity requires many sectors working together, including policymakers, public health, health care, and social care systems. While interventions in primary care settings to combat food insecurity can address patients' immediate needs and may improve health outcomes at the individual level, they must go hand-in-hand with broader efforts that tackle the long-standing racist policies that underlie food insecurity.

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SECTION 2: PRACTICE TRANSITIONS: Payments and Delivery

Payer Actions and Primary Care in the Wake of COVID-19: Will Primary Care Be There When We Need It?

Christopher F. Koller

Health systems experts acknowledge the benefits of a strong primary care capacity as the basis of a high-performing delivery system, but nobody in the United States wants to pay for it. It is a classic “common good” problem. Given the United States’ fragmented, third-party-dominated health care financing, no single entity can derive sufficient benefit from their individual action to oversee, let alone strengthen, primary care. Absent political power to influence public policy or economic power to drive private negotiations, primary care in the United States is overextended and underfunded.

In this weakened state, primary care in the United States was vulnerable at the onset of COVID-19 and less able to be a strategic asset in fighting the pandemic than it could have been. Primary care also suffered as people skipped their routine and follow-up appointments. A review of public and private payer actions to support primary care in the wake of COVID-19 shows a continuation of previous policy: neglect with occasional bright spots of activity. These results should not be viewed as surprising. Under stress a system will react based on previous strengths and tendencies. In the case of the US health care system, these strengths and tendencies have not included organized and powerful systems of primary care delivery or advocacy.

Pre-COVID-19

US primary care was weak before COVID-19. Privately insured visit rates had been declining,¹ as was the small share of US health care expenses devoted to primary care² and the share of the health care workforce in primary care.³ These declines occurred in spite of evidence that primary care was

the major contributor—above other health care services—to increased US life expectancy⁴ and better and more equitable health outcomes.⁵

Much of this lack of investment in primary care can be attributed to Medicare fee-for-service payment policies, which systematically devalue the cognitive services and care coordination provided by primary care in favor of the more technically complex services rendered by specialists.³ The private negotiation process used by employer-sponsored insurers and health providers to determine payment rates for care takes these Medicare rates as its starting point. The process also rewards the relative economic power of the negotiating parties, further disadvantaging primary care providers, especially those in independent practices.

In an attempt to address this, Medicare has continued to experiment with a number of primary care payment models, which have struggled to clear the high standard for widespread scaling of beating or equaling overall Medicare fee-for-service cost and quality measures.⁶ Several states, starting with Rhode Island and Oregon, had taken steps to use their authority in comprehensive ways to invest a greater share of health care dollars into primary care.⁷

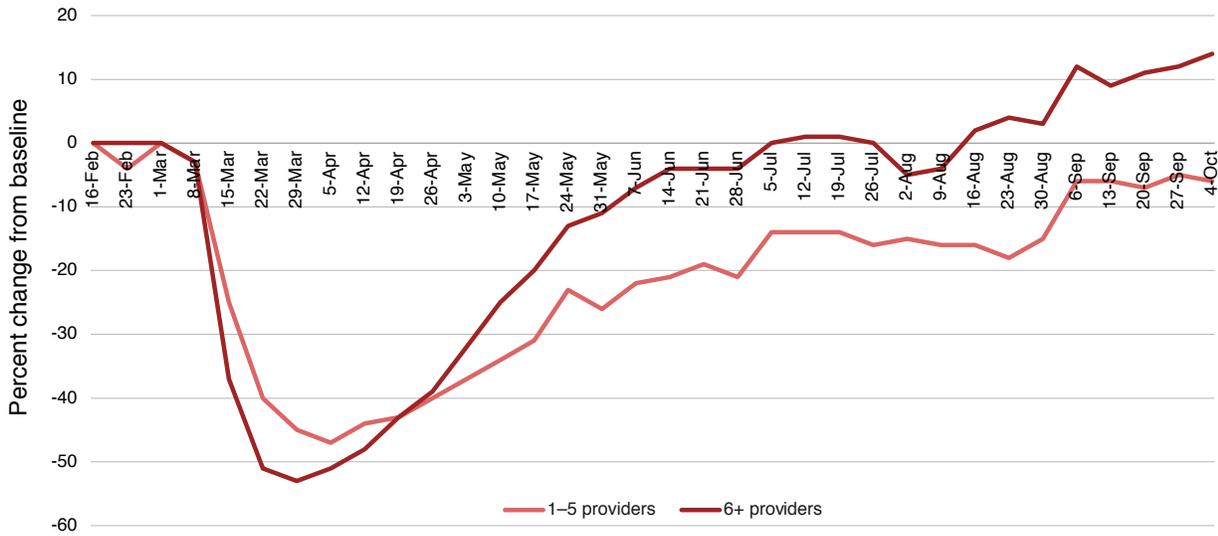
COVID-19's onset

The arrival of COVID-19 saw primary care ill-equipped for a pandemic. Absent administrative capacity, practices struggled to acquire personal protective equipment and develop protocols to safely test and treat potentially infectious people. Fearful of infection, patients stayed away and office visits fell by more than half in the initial months.⁸ Paid on a per visit basis, practices saw revenue plummet and providers teetered on the edge of viability. Weekly surveys of primary care practices by the Larry Greene Center conveyed a picture of grave emotional and financial distress.⁹

As the pandemic has worn on, primary care has adjusted. As of October 2020, analysis for the Commonwealth Fund indicates that larger adult primary care practices are at pre-pandemic visit levels.¹⁰ Smaller practices are not (Figure 1). Pediatric practices are slightly below baseline levels as well. For any practice paid on a per visit basis, this negative change from baseline is lost revenue that cannot be recovered. That translates to salary cuts, staff layoffs, line of credit costs, and practice closures.

It also means less primary care capacity at a time when it is sorely needed. A further weakening of primary care does not bode well for a country in a pandemic (Table 1). Families and individuals would lose their chief partner and navigator in maintaining their health. Public health practitioners would lose a valued partner in testing and tracing efforts, as well as ongoing prevention initiatives. Overburdened hospitals would lose an important triage and treatment function for less severe COVID-19 cases. Public and private payers would lose the capacity of their enrollees with chronic conditions to be managed more effectively in less expensive settings. Advocates for improved health equity would lose the only part of the health care system proven to reduce disparities in health outcomes.

Figure 1. Adult Primary Care Visits by Week in 2020 vs. Prepandemic Baseline¹⁰



Data derived from Mehrotra et al.¹⁰

Table 1. Overview of Primary Care’s Epidemic-Mitigation Capacities and Effects.

Capacity	Benefits
Leverage established, trusted patient relationships	Amplifies public health education efforts to prevent infection, limit spread, and reassure people
Test for and report positive cases systematically	Improves surveillance and early case identification and isolation
Participate in contact-tracing efforts	Lowers infection rates
Treat positive cases guided by the best evidence and in a safe setting	Improves patient outcomes and minimizes the spread of infection
Practice care coordination for cases	Minimizes demands on limited acute-care resources

Data derived from Shih and Koller.²⁵

Federal pandemic responses affecting primary care

The CARES Act funding passed by Congress—totaling \$175 billion for health care providers—was the most direct and sizable payer response to COVID-19 and reflected no prioritization of primary care. Without congressional guidance, the initial distributions of \$50 billion in CARES Act funding were made by the Centers for Medicare and Medicaid Services (CMS) based on a provider’s historic Medicare billing.¹¹ Developed for speed, simplicity, and fairness, this policy reinforced historical distributions, regardless of a provider type’s financial vulnerability or strategic importance in a pandemic. Subsequent distributions have relied on the Medicare formula but set aside amounts for special provider groups,¹² including safety-net hospitals, hospitals with high COVID-19 admissions, rural health care providers, and skilled nursing facilities, but not primary care providers as a broad class.

This failure to recognize and designate primary care as a prioritized provider type can be attributed entirely to the field’s lack of political cohesiveness. The diversity of a modern primary care team is simultaneously a clinical strength and political weakness. Comprising internists, pediatricians, family practitioners, nurse practitioners, nurses, physician assistants, and sometimes behavioral health clinicians and pharmacists, primary care, in contrast to hospitals, nursing homes, community health centers, and every other group receiving special consideration in CARES Act funding, lacks a unified voice in public policy discussions or political negotiations. The resulting distributions reflect that.

Beyond financial relief, initial federal responses were not targeted to primary care but benefited the field nonetheless. The CARES Act, enacted on March 27, 2020, detailed a “range of diagnostic items and services that plans and issuers must cover without any cost-sharing requirements or prior authorization or other medical management requirements,”¹³ including the evaluation services required to assess and test for COVID-19.

The financial effects of this order for primary care providers were relatively small. Far more significant was the declaration by secretary of Health and Human Services (HHS) Alex Azar on January 30, 2020, of a public health emergency.¹⁴ This gave the Trump administration broad authority to change Medicare and Medicaid administrative practices. Those Medicare policy changes with the most direct impact on primary care included the lifting of restrictions on the use of telehealth services during the COVID-19 emergency. Key changes effective March 1 and lasting throughout the national public health emergency have specifically included (1) paying physicians for telehealth services at the same rate as in-person visits for all diagnoses, not just services related to COVID-19; (2) allowing beneficiaries to receive telehealth services in all areas of the country and in all settings, including at their home; (3) expanding the list of services eligible to be reported via telehealth; (4) expanding the list of qualified health care professionals eligible to bill for telehealth; and (5) allowing physicians licensed in one state to provide services to Medicare beneficiaries in another state. In addition, the HHS Office for Civil Rights authorized flexibility for telehealth via popular video chat applications, such as FaceTime or Skype, during the pandemic.¹⁵

Administratively CMS relaxed its reporting requirements for physicians under its Merit-based Incentive Payment System for both program years 2019 and 2020.¹⁶ These payment,

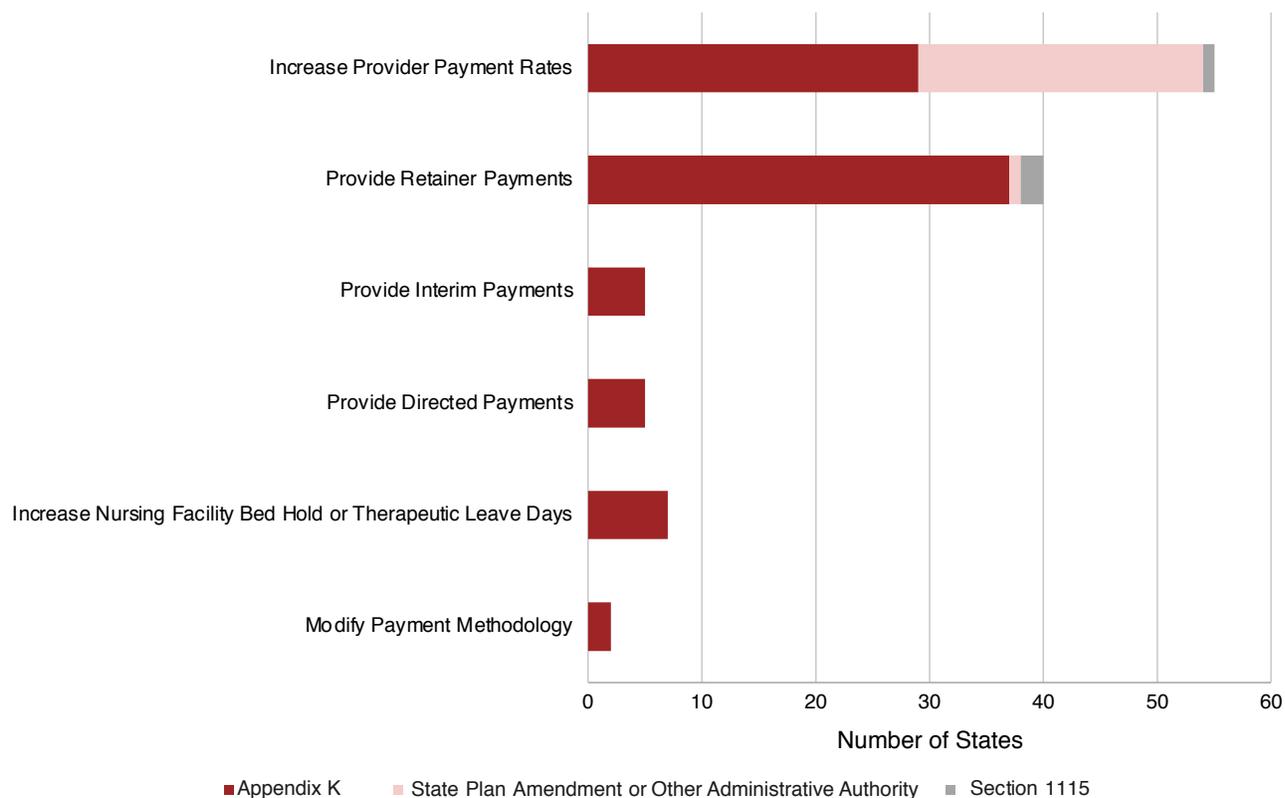
Figure 2. Telehealth Visits in a Given Week in 2020 as a Percentage of Baseline Total Visits¹⁰

Data derived from Mehrotra et al.¹⁰

benefits, and administrative changes were implemented in Medicare Advantage, as well as for fee-for-service enrollees. There were no changes to the Center for Medicare and Medicaid Innovations' (CMMI) payment models—including its largest model for primary care, Comprehensive Primary Care Plus (CPC+)—in the wake of COVID-19. Like some commercial insurers (discussed further later in the chapter) CMMI did advance its partial-capitation payments to its participating primary care practices, in its case for the third quarter of 2020.

The impact of Medicare's telehealth policy was significant, immediate, and positive. With many commercial insurers and state Medicaid agencies following Medicare's lead, researchers for the Commonwealth Fund assessed that in early April 2020, at the peak of the pandemic's effect on the delivery system nationally, 14% of pre-pandemic visit levels were being provided virtually.¹⁷ By the summer, with more practices seeing more people in person, the proportion had shrunk to 7% (Figure 2).

While Medicare's telehealth policy changes resulted in increased services capacity and some financial relief for beleaguered primary care practices in the wake of COVID-19, it was not a policy specifically targeted toward primary care, based on prioritizing primary care providers due to either evidence of particular vulnerability or strategic importance in pandemic response. As we will see, other payer types followed this lead.

Figure 3. State Emergency Actions to Provide Support to Medicaid Providers as of June 11, 2020.¹⁸

Data derived from Musumeci et al.¹⁸

Medicaid responses

As a jointly funded, state-administered program, Medicaid's policies vary considerably by state. As with Medicare, the HHS secretary's declaration of a public health emergency granted new flexibilities to the program, which state Medicaid agencies used in different ways and to different extents. Few of these appear to have targeted primary care providers in particular.

A summary of COVID-19-related state Medicaid activities pertaining to provider payments compiled by the Kaiser Family Foundation is found in Figure 3, with states most likely to increase payment rates or provide retainer payments.

Kaiser's analysis does not identify primary care as the target for any of these changes, although some states did allocate additional funding for safety-net primary care providers such as community health centers. A subsequent round of CARES Act funding by CMS also set aside \$15 billion in funds for Medicaid providers, including primary care providers such as community health centers, but only if they had not participated in previous rounds.¹⁸

This Medicaid-specific allocation is particularly important for clinical teams that care for children, since in any given year, over 60% of US children are covered through Medicaid or the Children's Health Insurance Program, and children's health care providers are excluded

from any distributions based on Medicare billing.¹⁹ In addition to concern about the financial viability of providers, advocates have pointed to the particular clinical needs of children during the pandemic, including behavioral health and preventive care, and the effects of their neglect.²⁰ It is not clear how these set-aside funds will be allocated and how children's primary care providers will fare in the resulting decisions.

As with Medicare, policy decisions by Medicaid officials in response to COVID-19 can directly or indirectly affect primary care providers. State Medicaid activity has made telehealth services more widely available from more providers and at enhanced rates, with 39 agencies establishing parity with in-person visits for some portion of services.²¹ Coverage has not been as broad as Medicare, however, with only 26 states allowing telehealth services to be originated at home.

In most instances, these policies would be implemented through state contractors, or Medicaid managed care organizations (MCOs). Beyond the state's policy activity, many MCOs took their own actions to respond to the pandemic. No catalog of this work exists. A review of a voluntary compilation of activities from the largest Medicaid MCO trade group, the Association of Community Affiliated Plans (ACAP), shows some examples relating to primary care practitioners, including advance prepayments based on historical use patterns, as well as supplemental distributions.²² Many of ACAP's member MCOs are sponsored by safety-net primary care providers or have strategic contracting relationships, which may account for these activities.

Employer-sponsored insurance responses

Slightly less than half of employer-sponsored coverage in the United States is provided through commercial insurance contracts overseen by state departments of insurance. The majority is provided by self-insured employers who are exempted from state regulation under the Employer Retirement and Income Security Act but rely on commercial insurers to administer these benefits. In the wake of COVID-19, as on other occasions, this overlapping authority created a confusing environment for primary care providers and the delivery system in general.

Populations covered by employer-sponsored plans were subject to the CARES mandatory coverage requirements for testing and evaluation, but, as noted previously, these requirements did not have significant effects on primary care practices. As with Medicare, of much greater impact was the extent to which commercial insurers and self-insured employers followed Medicare's lead in telehealth benefits and payment parity policies, waived cost-sharing requirements for subsequent COVID-19-related treatments, or implemented primary care-specific administrative changes.

There is no central repository for this information, but it appears that almost the entire commercial insurance sector followed Medicare's telehealth lead. Telehealth-related policy changes related to employer-sponsored benefits can be broken into four categories: (1) coverage parity with in-person visits; (2) payment parity with in-person visits; (3) cost-sharing waivers, and (4) expansion of allowable modes and locations of origin and providers. A review

of self-reported COVID-19-related activities by commercial insurers maintained by America's Health Insurance Plans (AHIP) indicates activities in all these areas and additional scattered mentions for primary care providers but no consistent policies targeted at preserving or strengthening primary care.²³

Some of the insurer support for telehealth may have been catalyzed by state government activity. A review conducted for the Commonwealth Fund of state laws, regulations, and executive orders related to commercial insurer coverage of telehealth showed that 12 states took action to ensure parity coverage, 12 states required parity of payment, 13 states took action on telehealth provider networks, and 12 required parity in cost sharing. Several other states formally encouraged their insurers to do the same thing.

A major national association of self-insured employers reported that employers followed their administrators' policies for telehealth coverage parity, payment parity, and networks. There was considerably more discretion taken by these employers in implementing cost-sharing waivers for telehealth (Pacific Business Group on Health, author inquiry).

Medicare's sweeping changes in telehealth benefits coverage created a practice that almost all commercial insurers—with additional prodding from some state officials—apparently felt compelled to follow. That said, Medicare did not take actions to specifically benefit primary care. Certain insurers, however, took additional steps in the wake of COVID-19 to prioritize the importance of primary care. An Urban Institute survey of commercial insurers' COVID-19-related practices and concerns revealed that some were concerned about financial ramifications of the pandemic on primary care practices resulting in either loss of clinicians or consolidation into larger health systems.²⁴

The Milbank Memorial Fund also surveyed insurers participating in CMMI's CPC+ program about their activities in support of primary care during the pandemic, which gives some insight into their relative prioritization of primary care practices in the pandemic (unpublished findings).

Consistent with self-reported activities by AHIP, 90% of the 44 survey respondents were covering telehealth video services at parity with in-person visits and 90% of these insurers were paying at the same rates. Seventy-five percent were also covering telephone services, and all at the same rates as in-person visits. Similarly, 90% had waived cost sharing for COVID-19-related treatments.

Of more import were the variety of practices that these insurers had either implemented or were considering specifically for primary care practices. One approach included cash advances to practices based on historical payments. To assure cash flow, insurers sometimes adopt a practice of "interim payments" to large providers such as hospitals in the wake of a temporary inability to pay claims. These are subsequently reconciled against actual activity. Although the basic CPC+ payment model mixes prospective per person payments with fee for service, there was some concern that this was not sufficient to keep practices operating. While considered by many, as of the summer of 2020, only 16% of respondents had actually implemented this practice. A second approach included accelerated quality incentive payments. Some insurers reported prepaying incentives due to the practices based on 2019 performance.

A third approach included administrative simplification, including the relaxation of prior authorization and appeals requirements, and extension of claims submission deadlines. A fourth approach included adjusting performance standards and measurement protocols for quality and utilization incentives for 2020.

Although objective comparisons are not possible, it is reasonable to surmise that these responses are not representative of all commercial insurer practices. Insurers that had already committed to a primary care-oriented delivery system strategy—including participating in multipayer activities like CPC+—would likely be more responsive to the needs of primary care practices during the pandemic.

Similarly, because of local accountability, regional nonprofit carriers could be more responsive to the needs of local primary care practices than national insurers, particularly when the equivalent needs of hospitals were being attended to by federal CARES Act efforts. Western New York is an example of a market in which the combination of local nonprofit insurers and previous multipayer primary care transformation work allowed for a relatively quick and comprehensive multipayer response to support primary care, including offering aligned policies to support telehealth use based on preexisting per capita payment methods, accelerating incentive payments, and relaxing reporting requirements.²⁵

Looking ahead

Faced with conflicting realities of the documented importance of a primary care-oriented delivery system for population health on one hand, and the economic power of consolidated health systems on the other, insurers have always struggled with justifying additional investments in primary care, particularly when their individual share of a given practice's revenue is small and the returns from such investment are likely to be diffuse and long term.

Although some commercial payers—generally nonprofit carriers with large market shares such as those in the New York Capital District, Maryland, and Hawaii—had strategically distinguished themselves with delivery system strategies that prioritized primary care, COVID-19 may have made this approach more appealing.²⁶⁻²⁸ The financial pressure faced by primary care increases the odds that the steadily increasing trend of employed primary care physicians—most of whom work for hospitals and health systems—would accelerate.²⁹ For insurers, this would lead to more primary care delivered in more expensive settings.

In the face of increased costs, some health insurers are reacting. For instance, Blue Cross and/or Blue Shield insurers in Massachusetts, North Carolina, and California—each a local nonprofit with significant market share—have all announced new contracting programs aimed at strengthening independent primary care practices.³⁰⁻³² Although the specifics vary in each case, these insurers are hoping the financial woes of the pandemic will make primary care practices more willing to move from fee-for-service payment methods to a model based on primary care capitation with additional incentives, regardless of whether these practices become part of larger, more comprehensive risk-sharing arrangements like accountable care organizations.

The insurers, for their part, have presumably learned from previous experiments with primary care capitation about its important and highly sensitive components,³³ including risk adjustment and patient attribution. It also remains to be seen if the pain of COVID-19 was a wake-up call for independent primary care practices. Will the revenue shortfalls incurred as a result of visit declines and a dependence on fee-for-service reimbursement motivate primary care practices to actually shift their revenue models in fundamental ways?

The previously described activities by individual insurers are the exception, not the rule. As the pandemic wears on, the lack of payer prioritization of primary care and the failure to align payer practices continues to constitute a missed opportunity to reduce the pandemic's toll and stem the tide of primary care practice acquisition.

Voluntary, aligned prioritization of primary care by payers is unlikely. A glimpse of the pandemic response possible when alignment is catalyzed by public policy can be seen in the work of the Maryland Primary Care Program (MDPCP), an organized effort at primary care transformation funded under the state's Medicare global payment waiver. MDPCP consists of supplemental per capita payments to participating practices from Medicare and Care First (the state's largest commercial insurer), as well as support for regional care transformation organizations (CTOs) that provide technical assistance, care management resources, and data feeds to practices from CRISP, the state's health information exchange. With the onset of COVID-19, these resources were deployed in a systematic way as part of the pandemic response. Capitation payments allowed practices to stay open.³⁴ Patients with chronic conditions were identified by CRISP and prioritized for outreach and consultation by CTOs and primary care practices. Equally important was the resulting communications network, which has allowed public officials to efficiently reach primary care practices serving half the state's population with clear, consistent messaging and information.

Drawing on opportunities for more and more effective work by primary care practices to address the pandemic and mitigate its effects, Labby et al. call for aligned payer investment in four areas, based on lessons learned by Oregon's care coordination organizations: (1) modernizing primary care access and clinical management; (2) expanding team-based care integrating behavioral health; (3) conducting screening and follow-up to address clinical, social, and behavioral health needs; and (4) building community partnerships and trust.³⁵

With minimum primary care spending requirements required by law of all Oregon's payers—and state managed care contracts in place for public employees and Medicaid beneficiaries—it is possible to conceive of these investments being made in that state.³⁶ Similar minimum spending requirements are in place in Rhode Island, and other states are making first steps by measuring current primary care spend rates, convening stakeholder groups, and setting

primary care spending targets.⁷ These actions create the opportunity for more future aligned payer action in support of primary care.

Conclusions

The economic [definition](#) of a common good is a good or service that is both *rivalrous* (the resource is limited, so more for one person means less for another) and *nonexcludable* (users cannot be prevented from accessing the good, regardless of whether they have paid).³⁶ While one might argue that morality and even US public policy—the federal Emergency Medical Treatment and Labor Act requires that no one be turned away from an emergency room, for instance—dictate that all health care is a common good, one could also argue that primary care is particularly privileged as a health care common good because of both its public value and its precarious status. Primary care provides greater increases in life expectancy and health equity than any other health care service, and its supply continues to be diminished.

Responsible public policy requires that a common good—be it the stock of fish, grazing grounds for farm animals or the capacity of primary care to meet the needs of a population—merits some degree of public oversight and monitoring. In the absence of that, the good is depleted and not available when the need for it increases.

Such has been the case with primary care in the time of COVID-19. With the possible exception of public policy in a few states that mandates payer primary care spending levels, it was not recognized as a common good before the pandemic and its supply was weakening. Lacking this protection, primary care has not been prioritized in public or private payer actions during the pandemic. Medicare’s (and Medicaid’s) telehealth benefit changes provided significant relief for primary care, but the field has received no special allocation of COVID-19 relief funds, unlike other provider groups. Commercial insurers, with some apparent exceptions, have largely followed Medicare’s lead and not made support of primary care—through changes in payments or benefits—a priority. Self-insured employers, with even less public obligation or local accountability, have followed suit.

If the pandemic-era response of payers to primary care has largely been a continuation of pre-pandemic policies, has the pandemic accelerated prior primary care trends, including decreasing visit rates, clinician supply, and spending levels? It is too early to say, but visit data and provider sentiment would indicate the pressures are increasing. The lessons of the pandemic for those supportive of primary care, however, remain unchanged. The evidence of primary care’s benefit for the collective health of society—in general or in a time of pandemic—is insufficient to change public policy or private payer actions. Political and economic power is necessary.

Acknowledgments

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Financial Challenges for Primary Care Under COVID-19

Bruce E. Landon and Susan N. Landon

The COVID-19 pandemic has had a significant and ongoing impact on the US health care system. As of March 2020, the majority of elective procedures and in-person outpatient visits were canceled temporarily, and only in June 2020 did in-person visits begin to rebound.^{1,2} Primary care practices, in many ways, have borne the brunt of COVID-19 on the ambulatory side of medical practice. In addition to addressing acute conditions that might have arisen during the pandemic and managing chronic medical conditions, they have been tasked with a myriad of new treatment and testing issues directly related to COVID-19. In many ways, primary care practices have been nimble in responding to the pandemic, but the pandemic also has revealed substantial challenges and shortcomings of the financing and payment mechanisms used for primary care in the current US health care system.

Although in-person ambulatory care visits have rebounded to a large extent since the peak of the shutdown in April and May 2020, primary care practices continue to feel the impact of the pandemic as substantial week-to-week uncertainty persists, with the virus surging in different parts of the country and changes in medical practices adopted in response to COVID-19 showing no end in sight as of the time of this writing in October 2020. In this light, we review some of the salient issues that have impacted primary care practice finances under COVID-19 and discuss strategies that have emerged to address these financial challenges. We then examine some potential long-term consequences that may emerge as a result of the pandemic, including some policy options that may be required to help assure that a viable primary care system continues to exist after the pandemic has receded.

The current practice environment

Primary care physicians make up just under one-third of the physician workforce in the United States, totaling roughly 220,000 practitioners.³ Included in this count are family physicians, geriatricians, general practitioners, general internists, and general pediatricians. An additional 67,600 nurse practitioners and 36,000 physician assistants contribute to the primary care workforce.³ Although substantial numbers of primary care physicians are employed by hospitals or health systems, more than half of US primary care physicians continue to operate within the community as full or partial owners of independent small practices. In contrast to hospital- or health system-owned practices, these practices lack ready access to capital and sufficient financial reserves required to provide a base of support in the absence of ongoing revenue. Moreover, according to data from the Medical Group Management Association (MGMA), the average primary care practice supports four support staff (including clinical and office staff) at a cost of well over \$200,000 per year, in addition to other operating costs of similar magnitude per full-time-equivalent (FTE) physician.⁴ The ability of practices to support such operations in the current environment remains unclear.

Primary care practices are particularly vulnerable to changes in visit volume, as almost all primary care revenue is derived from in-person evaluation and management visits. Primary care provides more than half of the approximately 1 billion office visits occurring annually in the United States, and approximately 85% of visits for those with chronic medical conditions such as hypertension and diabetes.⁵ Although 89% of primary care physicians use electronic medical record (EMR) systems, fewer practices routinely relied on telemedicine prior to the COVID-19 pandemic.⁶ This confluence of factors placed primary care practices in particularly vulnerable financial positions, and continues to threaten their long-term financial viability.

Financial impact of the pandemic on primary care practices

The health system in general, and primary care practices in particular, were forced to rapidly pivot in response to the pandemic, though the extent to which practices have changed in different parts of the country remains unclear. In the initial phases of the pandemic, in March and April 2020, although there was no coordinated federal response, 43 states and multiple cities and counties implemented stay-at-home orders and required the closure of all nonessential businesses. Although health care businesses were considered essential, most outpatient care and other elective care was deferred to minimize transmission of the virus to other patients, clinical staff, and physicians. Moreover, many patients did not want to put themselves at risk by leaving their homes to visit a primary care doctor for care that they felt could be deferred. Early on in the pandemic, there also were shortages in essential protective equipment and little guidance or knowledge as to the risk of viral transmission in different settings.

According to data from Phreesia, a company that provides practice management services to more than 50,000 providers across the country, in the immediate aftermath of the closures in March 2020, the overall number of ambulatory visits nationwide (albeit from a

nonrepresentative sample) fell by just over 50% for primary care, with the largest changes occurring in areas of the country most impacted by the pandemic.¹⁷ As of mid-June 2020, weekly visit counts had rebounded and plateaued at a level approximately 10% below pre-pandemic totals, and by July 2020, visit rates to primary care were just 2% below prior volumes.² To the surprise of many, the rebound in visit volume reflected a resumption of in-person care, though telehealth visits, which had peaked around 14% of visits nationally, continued to be used for approximately 7% to 10% of visits. A second data source, Healthjump (an electronic medical records database including data from 34,393 physicians), suggested that office visit volume fell even more dramatically, estimating that visit volume declined by as much as 64% (compared to February 2020). Similar to what was shown in the Phreesia data, Healthjump data showed that telehealth grew rapidly through April, but by July had plateaued at 11% of visits. In contrast to the Phreesia data, the Healthjump data did not show as dramatic a resumption of visits, with total office visits rebounding to only 82% of baseline (February 2020) visits by the end of July 2020 (Aaron Baum, PhD, personal communication based on analyses of Healthjump data, October 2020).

Notably, the rebound of in-person visits showed marked variation across different primary care practice settings. For example, rebound rates varied by location. Not surprisingly, as the virus surged in different areas of the country, primary care practices substituted telemedicine visits for in-person visits at higher rates, though they still continued to provide the majority of visits in person. In addition, the rebound of in-person visits was much lower for children, where visits across a range of ages continued to be 30% to 40% lower than normal by mid-June.¹ Finally, community health centers had in-person visits rebound at a lower rate, and they continued to provide telemedicine visits at a rate of twice that of other practices.¹

Through the first six months of 2020, primary care practices pivoted to providing telehealth (including both video and telephonic) while the government liberalized regulations allowing for telehealth provision and reimbursement. Nevertheless, some practices adapted to telehealth provision more quickly than others, as telehealth often required investments in new technology platforms, substantial integration with existing EMRs, development of new scheduling and workflow processes and templates, and training of staff. In addition, though all practices have the capacity to conduct visits by telephone, many may not have had sufficient access to high-speed Internet or other infrastructure necessary to provide video visits. Although liberalized rules during the public health emergency allowed for provision of telehealth services using basic equipment such as normal telephone lines or cell phones, the process of realizing such visits proved daunting for many practices.⁸

Regulations and policies governing the conduct of and reimbursement for remote visits have rapidly evolved, producing considerable uncertainty for practices.⁹ Although Medicare agreed to pay for telephone and telemedicine visits retroactive to March 2020, and some private insurers also have reimbursed remote visits at standard in-person evaluation and management visit rates, the extent to which such visits are able to replace the revenue of in-person visits and support the existing staff of primary care practices remains unclear.⁸ More important, many patients prefer in-person visits, and not all visits and patient conditions are appropriate for telemedicine. Thus, even in settings that have developed remote capabilities, the uptake

of remote visits is likely to be only a percentage of practices' prior in-person visit volume. A serial survey of primary care physicians in 48 states, Puerto Rico, and the Virgin Islands in late March 2020 found that 87% of respondents limited in-person visits and 60% were unable to perform any video visits.¹⁰

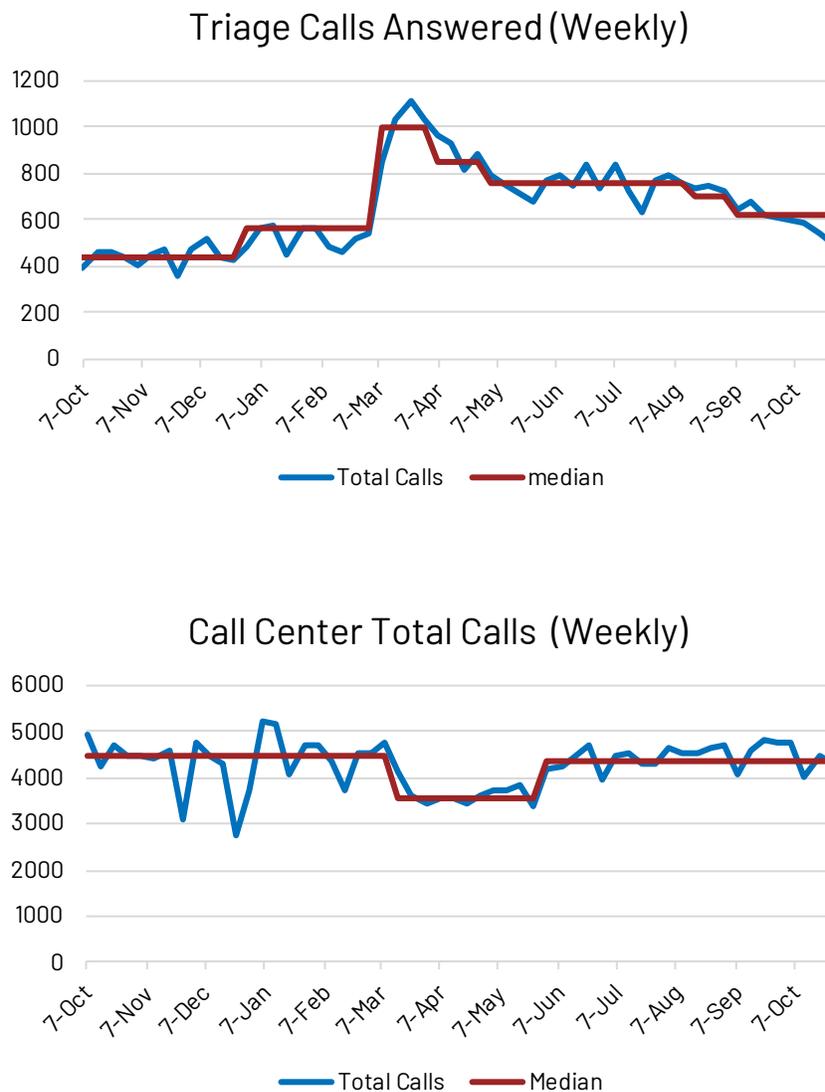
In addition to developing capabilities to deliver remote care, primary care practices also had to respond to the pandemic in a number of other ways, all of which can impact their revenue and cost structure. The issues presented during the pandemic impacted every facet of operations of primary care practices, all with significant financial implications. First, though practices limited in-person visits, anecdotal reports suggest large increases in telephone calls to practices, often to discuss potential symptoms or exposures to COVID-19 and to request COVID-19 testing. Due to the lack of testing resources throughout the country, testing centers required careful vetting of requests to reserve testing for those who required it most. Screening and triage of people with potential COVID-19 infection was generally carried out by primary care practices. Even as testing shortages eased over time, practices needed to devote substantial personnel resources to review testing criteria with patients, provide test results, and counsel patients with COVID-19 symptoms, exposures, or positive test results. There was also a substantial amount of telephone triage and follow-up that occurred for patients with acute or chronic issues unrelated to COVID-19, often outside the context of a virtual visit. Though no systematic data are available, Figure 1 shows the volume of telephone calls to one large academic practice in Boston. Notably, after an initial decline in calls as fewer patients were calling to schedule appointments, calls requiring nurse triage increased more than 150% and then maintained a volume that was just under 200% of the baseline rate. Similarly, when compared to the same six-month period in 2019, unreimbursed patient portal messages increased 60% from March 2020 to September 2020.

Upon the resumption of in-person visits, additional resources were required to assure the provision of safe care in the context of the ongoing pandemic. The additional resources included changing scheduling templates, modifying clinic workflows to decrease or eliminate use of common spaces and waiting rooms (e.g., all phlebotomy, vaccinations, and checkout services performed in the exam room), and setting up protocols for and investing in personal protective equipment for staff and patients visiting the practice. Because of dramatic drops in revenue from in-person visits at the start of the pandemic, many practices, in particular independent practices, were forced to implement some of these changes after furloughing employees early on in the pandemic. Although minimal data are available on these issues, the Primary Care Coalition, in collaboration with the Robert Graham Center, performed weekly surveys of primary care practices throughout the COVID-19 pandemic. Based on approximately 150 responses from mostly family physicians, as early as late March, over 15% of respondents employed strategies to decrease staffing costs (e.g., layoffs, furloughs, voluntary pay cuts, etc.).¹⁰ The percentage increased to 37% just one month later.¹¹

Data on how primary care practices have fared financially under COVID-19 are lacking. Among the most comprehensive are projections derived from a microsimulation model of primary care finances published by Basu et al. in *Health Affairs*.¹² That study used a validated microsimulation model in combination with data on how COVID-19 has impacted visit volumes as

well as payment policies for telehealth instituted by the Centers for Medicare and Medicaid Services to estimate the impact of COVID-19 on primary care practices nationally, assuming no change in cost structure. In sensitivity analyses, however, the model incorporated changes in costs that might have resulted from furloughing staff to the level of the 25th percentile in national staffing data from the Medical Group Management Association. The analysis projects that, on average, primary care practices would experience decreased revenue of more than \$67,000 per FTE physician, amounting to approximately \$15 billion in reduced revenue for primary care practices nationally.¹² Notably, some practices would potentially

Figure 1. Call Center Data from a Large Boston–Area Primary Care Practice (October 7, 2019 through September 14, 2020)



Source: Personal communication from Kayla Tremblay, practice manager.

move into negative net income for the year. The level of decreased revenue could be reduced by about half if cost savings strategies such as staff furloughs were employed. This simulation reflected the liberalization in reimbursement policies for telehealth that were enacted by the Centers for Medicare and Medicaid Services (retroactive to March 2020). Losses would be larger if telehealth payment policies revert to baseline in the pre-COVID era and if there are resurgences of COVID-19 causing reimplementations of shelter-in-place orders.¹²

Notably, the analysis could not incorporate additional costs related to implementation of telehealth technology, changes in practice flow and training of staff, or personal protective equipment expenses. There also are at least three other potential costs that were not considered. First, as noted earlier, increased volume of telephone calls, whether directly related to COVID-19 symptoms and testing or other acute or chronic medical issues, requires adequate staffing and reflects activity that is not reimbursed. Similarly, increased patient portal volume also represents additional work that currently is not reimbursed. Second, some practices collect significant ancillary revenue from performing laboratory or radiology tests in their practice. With the decrease in in-person services, these revenues also have shrunk substantially, with tests either being deferred or done elsewhere. Finally, though no national strategy has been released, it is likely that primary care practices will play a major role in administering COVID-19 vaccines in the coming years, which will present additional logistical and coordination expenses for practices, particularly given the need to minimize exposures and maintain social distance for patients coming to clinics in person to receive vaccines.

Beyond the microsimulation data, there are remarkably little representative data on the impact of COVID-19 on primary care finances, though some small surveys suggest substantial impacts on practice finances. For example, a survey conducted by the Physicians Foundation in July 2020 reports responses from more than 3,500 physicians, of whom 39% reported practicing primary care. Of note, the survey had a low response rate, so cannot be considered representative.¹¹ In that survey, 43% of all respondents reported that they had reduced staff and 8% had closed their practices.¹³ Among the 8% who had closed their practices, just under one-fourth reported practicing in primary care. Similarly, data from the monthly surveys administered by the Graham Center and the Primary Care Coalition show that, as of the end of June 2020, more than 70% of respondents felt under financial strain, even if they had received government help through Paycheck Protection Program funds (detailed in the next section).¹¹

Strategies to address financial challenges to primary care

On March 27, 2020, the Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law, providing \$2 trillion in relief for economic damage brought about by the COVID-19 pandemic. On April 24, 2020, an additional \$484 billion was allocated through the Paycheck Protection Program (PPP) and Health Care Enhancement Act to supplement funding for CARES Act programs.¹⁴ A number of provisions in the CARES Act directly or indirectly targeted health care providers, practices, and hospitals, in an effort to mitigate the economic effects on these organizations and individuals.

One of the main mechanisms by which the CARES Act supported primary care practices was through PPP loans. The CARES Act initially allocated \$349 billion to loans for businesses with fewer than 500 employees (including physician practices). Under this arrangement, primary care practices meeting this criterion could receive loans up to 250% of monthly payroll expenses to cover eight weeks of payroll as well as other fixed costs of running the practice, up to a maximum of \$10 million.¹⁵ If a given practice maintained employment and salary levels above a certain threshold, the loans would be forgiven. Any portion of a PPP loan not forgiven must be repaid within 10 years at a maximum interest rate of 4%. Additional funding for the PPP program was provided in the Paycheck Protection Program and Health Care Enhancement Act.¹⁵ In addition to PPP loans, the CARES Act expanded eligibility for the Economic Injury Disaster Loan (EIDL) and also allocated \$10 billion for small businesses in low-income communities to request advances of up to \$10,000 that could be used for immediate working capital needs. Though the EIDL loans must be paid back, the advances, which could be used for employee sick leave, maintaining payroll, covering costs of materials, paying fixed costs, or repaying debt, do not need to be paid back, but the amount would be subtracted from the amount forgiven in the PPP loan.¹⁵ In the same way that the PPP and EIDL loans bear the economic burden of the pandemic, they also helped physician practices to maintain financial stability and retain employees.

Beyond the PPP and EIDL loans, the CARES Act also included numerous relief provisions specifically targeting health care organizations. For example, the CARES Act provided funding to cover COVID-19-related expenses in health care organizations such as increased staff, training, personal protective equipment, medical supplies and devices, and COVID-19 care, as well as general lost revenue.¹⁵ In addition, the CARES Act set out grant programs to improve access to care in rural areas, which may be particularly vulnerable to a wave of COVID-19. Moreover, the CARES Act set restrictions on changes to reimbursement rates in an effort to protect providers from further financial burden.¹⁵ Table 1 provides a summary of strategies (both within and beyond the CARES Act) aiming to address financial challenges in primary care during the COVID-19 pandemic.

As the necessity of telemedicine became inevitable, the Centers for Medicare and Medicaid Services instituted policy changes (some of which were outlined in the CARES Act) to better accommodate this shift and accelerate essential changes in reimbursement. First and foremost, the Centers for Medicare and Medicaid Services expanded utilization of telephone and telehealth services to allow all Medicare beneficiaries access with no copayments. Under these policies, both new and established patients were allowed to receive care from a broad range of practitioners across state lines.¹⁶ Beginning on March 1, 2020, telephone and telehealth visits also were reimbursed at the same rates as outpatient office visits—and requirements such as performing a physical exam, conducting telehealth visits from a particular location, or using a specified secure platform were waived.¹⁷ In addition, to further support providers, the US Department of Health and Human Services launched a program to reimburse physicians at Medicare rates for providing diagnostic testing or treatment for uninsured COVID-19 patients.¹⁸

Further, as part of the CARES Act, the Centers for Medicare and Medicaid Services expanded the Accelerated and Advance Payment Program to distribute funding to hospitals and other

Table 1. Summary of Strategies to Address Financial Challenges in Primary Care

Program	Eligibility	Summary of Program Elements
Paycheck Protection Program (PPP) loans	Small businesses with <500 employees	Provides loans up to 250% of monthly payroll costs to cover 8 weeks of payroll, rent, utilities, and other such payments Maximum loan \$10 million Loans forgiven if threshold employment and salary levels maintained; otherwise, must be repaid within 10 years
Economic Injury Disaster Loans (EIDL)	Small businesses with <500 employees	Expanded access to EIDL loans Allows businesses in low-income areas to request advances on Economic Injury Disaster Loans of up to \$10,000 EIDL loans must be repaid but advances are forgiven (though deducted from the amount forgiven for PPP loans)
Provider Relief grants	Any health care entities	Provides financing for COVID-19 expenses including staff, training, personal protective equipment, and lost revenue Supplemental grants for detection, treatment, prevention, and diagnosis of COVID-19 were also distributed
Accelerated and Advance Payments	Medicare and other payers	Loans to providers to cover any disruptions in claims during the pandemic Loans start to be repaid from new claims reimbursements 1 year after loan initiation
Rural health service grants	Rural health centers and providers	Renews Health Resources and Services Administration grants to improve and expand rural community health Expands grants specifically focused on telehealth in rural communities
Reimbursement for uninsured	Practices testing and treating COVID-19	Clinicians performing diagnostic testing or treating patients with COVID-19 can submit claims for uninsured patients to US Department of Health and Human Services for reimbursement
Sequestration adjustment	Medicare providers	Exempts Medicare programs from any budget sequestrations from May 1 through December 1, 2020
Telehealth expansion	Medicare/private payers	Increased flexibility in telehealth visits in terms of eligible providers, patients, locations, appointment elements, and software Centers for Medicare and Medicaid Services now reimburses telehealth visits as it does in-person visits Telehealth copayments waived for patients (even if enrolled in a high-deductible health plan)
Merit-Based Incentive Payment System (MIPS) changes	Medicare providers	Practices unable to submit Merit-Based Incentive Payment System data received neutral payments or could submit applications to have performance scores reweighted due to extreme, uncontrollable circumstances
Commercial health plan value-based payment	Example: Blue Cross of North Carolina primary care practices	Participating practices receive monthly payments based on 2019 revenue Practices enroll in value-based payment program with quality and cost benchmarks In 2022, practices can transition from fee-for-service to capitation-based pay

providers experiencing disruptions in revenue.¹⁹ These loans provided advance reimbursement from Medicare fee-for-service payments. Repayment of these loans was initially slated to begin 120 days after the first loan payment, but on October 1, 2020, the loan repayment timeline was extended to one year after the first loan disbursement.¹⁹ Repayments will be taken directly from new claims, with 25% of new claims taken out to cover these loans for 11 months, then 50% for the following six months. Providers must fully repay the loans within 29 months of the first disbursement or they will be charged at a monthly interest rate of 4%.¹⁹ Numerous private insurers have also instituted advance payment programs for practices and providers.²⁰ These programs, however, present challenges to primary care as they will have to be repaid out of future operating revenue. Most primary care practices have limited ability to increase their hours to generate additional patient volume, suggesting that loans will need to be paid back from future physician pay.

Over the past months, the Centers for Medicare and Medicaid Services also implemented changes to the Merit-Based Incentive Payment System (MIPS) to protect providers and practices against extreme financial losses.²¹ For example, individual clinicians who did not submit MIPS data by April 30, 2020, will automatically receive neutral payments for 2021. Practices that could not complete MIPS data submission due to COVID-19 also were able to submit applications based on extreme and uncontrollable circumstances to receive reweighted MIPS performance scores.²¹ MIPS performance scores traditionally are used to determine payment increases or reductions, so such policies protect providers and practices from seeing significant funding cuts following the unprecedented shifts seen during the COVID-19 pandemic.

In addition to these federal policies, individual health plans implemented strategies to mitigate economic effects on primary care providers and practices. For example, the Accelerate to Value program of Blue Cross and Blue Shield of North Carolina (BCNC)²² aims to promote high-value care among independently owned primary care practices while helping them to remain financially viable throughout and beyond the COVID-19 pandemic. Participating practices will receive capitated monthly lump-sum payments from BCNC based on 2019 revenue, but also have to commit to participating in a value-based care program that holds providers accountable for reaching quality and cost benchmarks.²² Similarly, as part of their Health Reimagined initiative, Blue Shield of California introduced a program in September 2020 that offers select physician practices the opportunity to shift to a capitated payment model with additional financial incentives for meeting quality and patient experience benchmarks.²³ These capitated payment and value-based approaches are designed to provide economic security through the pandemic in return for a future commitment to adopting a value-based payment strategy. In July, Blue Cross Blue Shield of Massachusetts also announced an expansion of its value-based payment approach, the Alternative Quality Contract (AQC), which extends an AQC-type model to independent primary care practices while also shifting to a primary care capitation model (i.e., a risk-adjusted monthly fee to provide primary care for all “enrolled” patients) and offering additional incentives for meeting certain quality benchmarks.²⁴ Although the announcement of the Massachusetts program expansion was not explicitly tied to economic effects of the COVID-19 pandemic, today’s financial uncertainties may accelerate entry into alternative payment programs like this.

Long-term consequences

Despite the mitigation strategies put into place to protect primary care practices from financial collapse, it is likely that the financial challenges faced by primary care under COVID-19 will result in more far-reaching and long-lasting changes. In some cases, COVID-19 might accelerate the adoption of innovative approaches to primary care; in other cases, the pandemic could result in serious challenges for the primary care system in many parts of the country.

Continued challenges

Even with primary care visits largely rebounding since the start of the pandemic, changes in practice organization and operations persist alongside the looming threat of another COVID-19 surge, leaving lingering financial concerns. Moreover, particularly for smaller, independent practices that lack significant sources of capital and financial reserves, the future remains uncertain. With this in mind, it is likely that we will see primary care practice closures and consolidation in the wake of the pandemic. Practices with significant financial resources in reserve and the capacity to adapt to new regulatory requirements within the office and new telehealth platforms outside of the office are likely to withstand the test of the pandemic, but practices without even one of these three elements are likely to struggle.

Acceleration of consolidation

Primary care practice consolidation was on the rise prior to the start of the pandemic, mirroring a declining trend in the percentage of providers who have ownership in their practices. Consolidation is changing the landscape of primary care, and it is likely that the COVID-19 pandemic will hasten the demise of independent primary care practices. Such consolidation has been associated with increased prices^{25,26} and decreased physician satisfaction.^{27,28}

Accelerating payment reform

Despite these negative consequences of COVID-19 on primary care practices, positive effects on payment reform, innovation, and competition are also likely to be seen in primary care. For many years, researchers have lambasted the traditional fee-for-service payment structure that exists in the United States. Particularly for a specialty like primary care that must provide first contact, continuous, coordinated, and comprehensive care, the fee-for-service payment system that limits payment to face-to-face visits and services is poorly matched to the tasks required to deliver such care. Moreover, a payment system that incentivizes utilization of services is bound to generate wasteful spending and visits that are not patient-centered. At times, this could be at a detriment to patient health and well-being.^{29,30} Shifting to a payment system based on primary care, for example, incentivizes providers to be more considerate and discerning in their utilization of health care resources.

At the same time, capitation allows providers to expect a set payment per patient per month, ensuring a baseline level of financial security. When practices minimized in-person visits at the peak of the pandemic, service utilization was at a nadir and thus fee-for-service

payments were too. In a capitated payment system, providers would have seen fewer financial consequences at that time. Overall, transitioning to capitation presents an opportunity to improve health care value in the long term while protecting providers' financial security. Payment reform has been a discussion among health care researchers and policymakers for years, but the COVID-19 pandemic may accelerate the transition to these models, as we have already seen in some of the health plan programs mentioned earlier.

Accelerating innovation

To respond to changing circumstances, primary care practices have had to develop innovative strategies in telehealth and practice organization. Although telemedicine has been on the horizon for some time, it had yet to become a part of routine practice. For many aspects of primary care, telehealth can provide an appealing alternative to an in-person visit, allowing patients to speak to their provider easily without the hassle of coming into the office. For patients who may have difficulty accessing a primary care clinic due to location or time constraints, telemedicine also may effectively remove barriers to care. Thus, the pandemic has accelerated the adoption of telemedicine and other virtual and/or asynchronous approaches to care that will tend to enhance the ability of primary care practices to deliver patient-centered care. Moreover, to the extent that payment reforms such as primary care capitation are adopted, this also will ease concerns of payers that decreasing barriers to care through telemedicine might actually lead to increased utilization.

Finally, in spite of expected primary care practice consolidation in the wake of the pandemic, enhanced competition may emerge from new, innovative delivery models, including convenience care settings such as retail health clinics, or virtual platforms such as telemedicine-focused companies moving into the primary care space. During the pandemic, ease of access and efficiency of care were particularly important to patients. Thus, patients may have turned to sources such as retail clinics and virtual platforms while primary care practices were closed or limited in their capacity. These platforms are developing new and innovative technologies to overcome the limitation of not being able to perform physical exams, which could enhance their ability to deliver comprehensive care. What is not known, however, is the extent to which such innovative platforms will be reserved mostly for generally well patients or whether such models will be able to adapt their model to care for patients with multiple chronic conditions. Regardless of the patient population served, creating open lines of communication and coordinating care across multiple providers operating through different health care platforms will be crucial to the long-term viability and success of these innovations in care delivery.

Conclusions

The COVID-19 pandemic has had a profound and consequential impact on primary care practices and their financial stability. Overall, primary care practices have responded swiftly and creatively, adapting to telehealth platforms and restructuring care delivery, but the economic impact of the pandemic continues to threaten their long-term viability. Strategies aiming to mitigate economic effects of the pandemic on primary care practices have primarily

focused on short-term grants and loans, as well as expansion of reimbursement for telehealth visits to date, but they have failed to address the issue of long-term financial stability. Consequently, practice closures and consolidations are likely to rise in the coming months alongside opportunities to reform primary care through payment reform, innovative care delivery, and increased competition. As the COVID-19 pandemic enters into its next phases, securing the economic future of primary care practices will be central to overcoming COVID-19, ensuring the health of the US population, and maintaining a functional health system.

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Financial Consolidation of Primary Care Practices During and After COVID-19

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The COVID-19 pandemic changed the ways that we work, go to school, shop, and eat, and even the way we breathe. Health care providers were dramatically affected, and often not in the way that was expected. Somehow a public health crisis, resulting in millions of sick Americans, counterintuitively resulted in a financial crisis for health care providers across the country. Primary care providers, the first-line stop for many patients with symptoms of COVID-19, were particularly financially vulnerable during the spring, summer, and fall of 2020.

On March 18, 2020, in response to the COVID-19 pandemic, the Centers for Medicare and Medicaid Services (CMS) issued recommendations to postpone all nonemergent medical care conducted in ambulatory care sites, hospital outpatient departments, medical offices, and Federally Qualified Health Centers (FQHCs), as well as rural health care facilities.^{1,2} The purpose of these recommendations was to limit the spread of COVID-19 and to preserve personal protective equipment and other medical resources, such as ventilators. Guidance from 36 states and the District of Columbia reinforced the CMS recommendations.³

Impact of COVID-19 on primary care

Financial impact

By the end of March 2020, the number of nonemergent medical visits across all practices had dramatically reduced. A Commonwealth Fund study analyzing data from more than 50,000 medical practices found a 59% decline in ambulatory care visits between March 1 and March 29 of 2020.⁴ Medical Group Management Association (MGMA), surveying 724 respondents across all practice types between April 7 and 8, 2020, confirmed a patient volume reduction of 60%.⁵

In a primarily fee-for-service environment, volume downturn meant major revenue loss. MGMA reported a 55% decrease in revenue during the first week of April.⁵ In mid-July the Physicians Foundation, surveying medical practices in 20 states, found that 55% of respondents across all practices reported income losses of between 26% and 100%.⁶ The reported income losses were consistent across geographic regions. At least 11 states released the results of surveys conducted of their medical practices.⁷⁻¹⁸ The majority of practices experienced both a decline in patient volume and corresponding loss of revenue (Table 1).

Table 1. Key Findings From State-Specific Surveys of Physicians

State	Period of Survey	Key Findings
Alabama ⁷	Spring/Summer 2020	59% of respondents reported revenue reduction of greater than 50% because of reduction in practice volume.
California ⁸	April 2020	Between March and April 2020, revenue declined by an average of 64%, with 98% of respondents reporting “substantial” declines in patient volume.
Colorado ^{9,10}	July 2020 August 2020	75% of respondents face challenges to the financial survival of their practices.
Indiana ¹¹	April 2020	More than 80% of respondents reported more than 40% decline in both patient volume and revenues.
Kentucky ¹²	April 2020	73% of respondents reported patient volume declines of greater than 50%, and 69% reported revenue volumes declining by greater than 50%.
Massachusetts ¹³	May–July 2020	A 44% reduction of in-person visits since March, with corresponding revenue losses, was reported.
Minnesota ¹⁴	June–July 2020	Overall median patient volume decreases of 56% and overall median revenue decrease of 46% were reported.
New York ¹⁵	April–May 2020	More than 75% of respondents reported declines in patient volume and revenue in excess of 50%.
Pennsylvania ¹⁶	April 2020	71% of respondents reported a decline in patient volume between 51% and 100%.
Texas ¹⁷	May 2020	63% of respondents indicated that their revenue had declined by more than 50%.
Washington ¹⁸	April 2020	The mean patient volume decrease was 62%, and 92% of practices suffered revenue losses between \$150,000 and \$1,000,000.

The reduction in the volume of patients seeking nonemergent care also left hospitals vulnerable to steep revenue drops. According to the CMS tiered approach, emergent care is care that is necessary to be provided on an in-person basis to avoid harm to the patient.² By contrast, nonemergent care includes care that, if not provided, has the potential to increase patient morbidity and mortality.² Management of existing medical and surgical conditions in currently stable patients are considered nonemergent, even if delay increases the risks of patient harm in the future.^{2,19,20} Nonemergent care encompasses elective surgeries, like hip and knee replacements, which are a substantial component of hospital revenue.¹⁹⁻²² Cancellation of virtually all elective surgeries, along with large decreases in the patient volumes in specialty

and primary care clinics, caused hospital revenues to halve in some cases and left hospitals struggling for cash on hand.^{21,23} A report by the American Hospital Association estimated that hospital losses for cancellation of nonemergent care amounted to \$161.4 billion for the four-month period of March to June 2020 alone.²⁰

Additional costs of care during COVID-19

Preparing to care for COVID-19 patients and secure the safety of health care workers required significant increases in expenditures from primary care practices and hospitals. Primary care practices and hospitals needed to acquire personal protective equipment and (in the latter case) ventilators, enhance COVID-19 testing capacity, increase cleaning and disinfection, and create or expand the availability of negative pressure rooms.¹⁹⁻²¹ New operational processes needed to be created to minimize the contact of patients with providers, staff, and other patients during visits, each of which limited efficiency and created additional costs. Therefore, at the same time that practices had the lowest revenue in memory, they also had an influx in direct costs related to treating patients during a pandemic.

Government response

Four stimulus laws impacting health care financing were enacted during March and April 2020 in response to the COVID-19 pandemic.

1. The Coronavirus Preparedness and Response Supplemental Appropriations Act, enacted on March 6, 2020, allocated \$8.3 billion to federal agencies, including the Department of Health and Human Services, toward vaccine development and public health.
2. The Families First Coronavirus Response Act was enacted on May 18, 2020, at a cost of \$104 billion and required Medicare and private health insurance plans to cover COVID-19 testing.
3. The Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into law by President Trump on March 27, 2020. The \$2.2 trillion act was the most expensive spending bill in American history. The Paycheck Protection Program (PPP) for small businesses and the Coronavirus Economic Stabilization Act for midsize businesses established by the CARES Act provided loans for ailing primary care practices, as did the Economic Injury Disaster Loans (EIDL) and the Small Business Administration Debt Relief Program.
4. The Paycheck Protection Program and Health Care Enhancement Act, which was signed into law on April 24, 2020, replenished funding to the PPP, EIDL, and other programs established by the CARES Act.

The CARES Act provided support for hospitals and health care providers and loans for small businesses. By boosting Medicare payments, waiving cuts to laboratory and durable medical equipment reimbursement, and expanding eligibility for Medicare pilot programs, the act increased Medicare payments for providers and practices. The act also paused Medicare

“sequestration,” a 2% automatic spending cut, from May through December 2020, effectively increasing payment for providers.

As part of the CARES Act, the Accelerated and Advance Payment Program (AAPP) authorized CMS to provide advance payments to any Medicare provider meeting qualifications including previous Medicare billing. These payments allowed for a three-month advance equaling the prior three-month billing estimate. Repayment was required to begin after 120 days and finish within 210 days from payment.²⁴⁻²⁶ Small businesses were further notified as of May 15 of potential loan forgiveness. Although almost \$100 billion was distributed through AAPP, only \$16.7 million reached primary care providers (categorized as those in family practice or general practice).²⁷

Smaller practices with fewer than 500 employees were potentially eligible for both the EIDL and the PPP loan to cover different expenses. In the first three months of the programs, 13% of overall PPP funds—almost \$67.4 billion—flowed into health care and social services. More than 22,300 practices, almost 5% of all physician’s offices, received loans of at least \$150,000.²⁸ Primary care practices were also eligible for tax credits if gross earnings for March through December 2020 were at least 50% less than those earned during the same quarter during the prior year. Nonetheless, a survey of primary care providers conducted at the end of May, by the Larry A. Green Center and the Primary Care Collaborative (the PCC Survey), found that only 50% of primary care practices reported receiving a loan through the PPP or SBA programs, and almost a quarter of primary care practices received no support at all.²⁹

Through the public health and social services emergency fund, practices suffering financial challenges were also eligible to receive grants totaling \$30 billion based on prior Medicare fee-for-service billing. The CARES Act Provider Relief Fund reimbursed eligible providers for lost wages directly.

Consequences of financial losses

Financial losses in the health care sector are better tracked among hospitals than among primary care practices, but hospital data serve as a broad indicator for overall health care provider financial impact. Due to the increased costs connected with caring for COVID-19 patients, the declines in patient volume, and the loss of revenue, Moody’s Investors Service downgraded its outlook on bonds issued by nonprofit and public hospitals from stable to negative in March 2020.^{30,31} The financial stressors on hospitals precipitated conditions of ongoing financial losses for many hospitals. The situation was summed up in a report commissioned by the AHA and released in July: before COVID-19, the typical hospital operating margin was 3.5%; by the fourth quarter of 2020, half of American hospitals were projected to have negative operating margins, ranging from -1% to -11%.³²

The financial predicament in which hospitals find themselves post-COVID-19 has led to dozens of closures or bankruptcies of hospitals across the United States.^{22,33,34} However, financial challenges facing primary care practices may be even more concerning than the challenges facing hospitals, which are more sophisticated and have greater access to capital markets and greater diversity in revenue streams than primary care practices. Yet due to fewer

consolidated financial projections or systematic tracking, the financial losses and associated closures and bankruptcies among primary care practices are less apparent than the financial conditions of hospitals in the United States, and a systematic accounting of practice closures or bankruptcies is not yet available for primary care practices nationwide.

Provider consolidation

Provider consolidation has been occurring in US health care for decades, at the hospital level, among health plans, and among small provider groups.³⁵ The economic reason for consolidation is clear: market power brings negotiating leverage and negotiating leverage leads to higher prices. Provider consolidation has occurred continuously across the spectrum of providers over the last 20–30 years. To understand overall provider consolidation as it relates to primary care, it is important to understand hospital consolidation as a major precedent to other forms of provider consolidation.

Hospital consolidation

Hospital consolidation is well documented in the academic literature. According to data from the AHA, there was an average of 78 hospital transactions per year every year between 1998 and 2015, for a total of 1,412 transactions.³⁶ Hospital markets are now concentrated with 90% of metropolitan statistical areas (MSAs) considered concentrated based on the Federal Trade Commission (FTC) standard that a highly consolidated market has a market concentration index of 2,500 or higher.^{37,38} For example, a market with only two provider groups, each with 50% market share, would be well above this threshold and be considered “highly concentrated” with a Herfindahl–Hirschman Index (HHI) of 5,000; meanwhile, a market with 10 providers, each with 10% market share, would have an HHI of 1,000 and have low market concentration.

The Herfindahl–Hirschman Index (HHI) is calculated by summing the squares of the individual firms’ market shares. For example, a market consisting of four firms with market shares of 30%, 30%, 20%, and 20% has an HHI of 2,600 ($30^2 + 30^2 + 20^2 + 20^2 = 2,600$). The HHI ranges from 10,000 (in the case of a pure monopoly) to a number approaching zero (in the case of an atomistic market). Although it is desirable to include all firms in the calculation, lack of information about firms with small shares is not critical because such firms do not affect the HHI significantly.

It is well documented that, while hospitals state that they aim to provide economies of scale and improve quality, in reality, consolidation primarily increases negotiating leverage, which results in increases in prices.³⁹ This consolidation has a real and tangible effect on hospital pricing, and in-state hospital acquisitions yield a price increase of 7% to 9%.⁴⁰ While hospitals may claim higher prices reflect higher quality, there is evidence that consolidation in the hospital sector has led to higher prices, but not to higher value.³⁹ Evidence of in-market consolidation’s impact on prices is even clearer. Highly concentrated markets experiencing mergers had price increases exceeding 20%.⁴¹ There is little evidence of improved quality and there is evidence that patient satisfaction declined.⁴²

The general conclusions in the hospital sector are:

1. Hospitals are consolidating.³⁵
2. The consolidation has led to clear increases in prices with little evidence of improved quality or patient satisfaction.^{39,42,43}
3. Antitrust enforcers face legal hurdles to reduce incremental acquisitions that result in broader market consolidation.³⁹

Provider consolidation

Data describing trends in provider consolidation are growing in the academic literature, but also in the trade literature, which can help provide insight when research is unavailable. The high cost of practice management has led to hospital acquisition of practices in a movement called vertical integration.⁴⁴ From 2010 to 2016, primary care market concentration increased faster than market concentration in the specialties. The mean HHI increased by about 5% for hospital providers and specialist physician organizations, while for primary care physicians, the HHI increased by nearly 29%.³⁷ This means that primary care physician consolidation occurred rapidly in the period just before the start of COVID-19, relative to consolidation among specialists and hospitals. The share of physicians in groups less than 10 dropped 12% between June 2013 and December 2015.⁴⁵ The number of physicians in vertically integrated systems rose from 40% in 2016 to 51% in 2018.⁴⁶ This trend held for primary care physicians, with 38% affiliated with systems in 2016 increasing to 49% in 2018.⁴⁷ While system size grew between 2016 and 2018, the greatest percentage change was realized by primary care physicians, resulting in an 11 percentage point increase.⁴⁷

While provider consolidation increased in primary care, there may have been lower price increases for primary care practices than for other specialties. From 2012 to 2016, primary care reimbursement rates grew (as a percent of Medicare) 7% per year, while emergency room provider and anesthesiology provider rates grew nearly 30% per year.⁴⁸

Private equity as a consolidation catalyst

In recent years, private-equity firms, which are financial organizations that make investments in existing businesses in exchange for a share of ownership, have acquired primary care practices frequently with the objective of increasing the value of the practice and selling for a higher price. Most private-equity firms are not generally run by physicians, but many have invested millions in medical practices. When these firms purchase medical practices, they typically start with a multimillion-dollar acquisition of a large, popular practice, which functions as an anchor attracting patients and doctors to the new group. Following this large acquisition, private-equity firms often purchase smaller offices and solo practices to fold into the larger practice brand, giving the group a regional presence.⁴⁹ As these private-equity-owned practices grow and become major providers of outsourced services like anesthesia, they can gain greater market power in their negotiations with hospitals and insurance companies. Private equity has been less focused on primary care in the past, due to lower total revenue at

primary care practices, but that could change as referrals become more important for other private-equity-backed practices. When these private-equity-owned firms negotiate higher insurance reimbursement rates, they can range anywhere from \$25 to \$125 more per visit than among non-private-equity-owned primary care practices.⁴⁹

Primary care practice response to COVID-19

At the outset of the pandemic, primary care practices were among the most vulnerable to financial downturn. Approximately 56% of primary care practices are fully or partially owned by their clinicians.⁵⁰ Primary care physician earnings are among the lowest in the profession.^{50,51} Before COVID-19, primary care visits had been trending downward, resulting in lower income over time, with a 25% drop in visits between 2008 and 2016.⁵² Hence, primary care practices had limited cash reserves before the pandemic.⁵¹

The PCC Survey series, conducted weekly since March 2020, provided a detailed account of the loss of patient volume and decline in patient revenue and its impact on this already vulnerable sector. After the CMS recommendations to avoid in-person visits, 90% of primary care providers limited well and chronic care visits, and 19% stopped providing any routine care. As a result, 50% of practices either lacked cash on hand to last four weeks or were unsure of their cash reserves.⁵³ By mid-April, 85% reported such “dramatic decreases” in patient volume that 55% indicated that they either expected to close or were unsure if they could remain open.⁵⁴ Around 20% of practices closed temporarily.^{55,56}

For practices that remained solvent through May, 60% reported that less than half of their work was reimbursable, with 57% reporting that payments received were insufficient to cover the cost of care delivered.⁵⁷ Practices stayed afloat by reducing payroll expenses: for weeks, around 40% or more of practices consistently reported laying off or furloughing staff.^{54,55,58} At the same time, costs were also increasing: unused vaccines owned by the practices expired and had to be destroyed, while PPE was unattainable except at exorbitant rates.^{57,58} In addition, they had to invest in creating new operating procedures to keep patients at a safe distance from providers, staff, and each other, and consistently enforce these procedures. In June, 25% of respondents had skipped or deferred their salaries.³⁹ By September, 34% of respondents reported that clinicians in their practice had taken or were planning to take early retirement or otherwise leave the practice.⁵⁹

Telehealth reimbursement

Telehealth provided some bulwark against this downward trajectory in patient volumes and revenue for primary care and other providers. Beginning on March 6, CMS expanded eligibility for telehealth services to be reimbursed at rates identical to in-person service on a temporary and emergency basis.^{60,61} The CARES Act expanded coverage and payment for telehealth, extending changes initiated in the March 6 law. Effective March 1, the act authorized Medicare to pay providers for telehealth visits at the same rate as in-office visits, regardless of visit diagnosis. Providers were authorized to provide telehealth services from home and were authorized to provide services to Medicare beneficiaries in another state. Telehealth services

could be provided to new and established patients, allowing new patients access to primary care from their home. Remote patient monitoring and virtual check-ins were authorized for reimbursement through Medicare. Audio-only phone visits were reimbursable, providing access for patients who may lack smartphone technology. Telehealth access was expanded not only for medical providers, but also for other health care professionals frequently employed in primary care practices, including social workers, psychologists, and physical therapists. The act expanded payment for telehealth to underserved patients by funding FQHCs and rural health clinics to provide telehealth services. Traditionally face-to-face visits such as for hospice recertification could be fulfilled through telehealth visits. The act mandated that high-deductible health plans cover telehealth before the deductible was satisfied. In addition, the act allocated funding to grant programs to promote use of telehealth in training and health care delivery. The act also provided for educational loan deferment and pension relief, providing a potential income buffer to providers and small practices.

Telehealth in primary care

Although many practices needed to enhance their technology capabilities to provide virtual care,⁶² by mid-May 85% of respondents to the PCC Survey reported providing a “significant” amount of telehealth care on both video- and audio-based platforms.⁵⁵

With fewer patients presenting for in-person primary care, new policies facilitating telehealth, and larger practices incorporating platforms necessary to support technology, telehealth visits increased dramatically by the initial peak in COVID-19 cases in April 2020. Before the pandemic, approximately 13,000 Medicare recipients received telehealth visits weekly, compared with 1.7 million beneficiaries the last week of April, and 9 million beneficiaries throughout the spring of 2020.⁶³ Telemedicine facilitated distanced medical care and improved safety for both patients and providers when an in-person visit was not necessary. Telehealth was used for triage and management of COVID-19 cases, follow-up, and preventive health care, as well as non-COVID-19-related chronic disease management.⁶⁴

Under an 1135 waiver, a number of additional visit types and locations were funded and reimbursable by Medicare, including virtual check-ins and e-visits. The US Department of Health and Human Services also provided for reduced or waived cost sharing for telehealth visits for patients covered by Medicare, Medicaid, and the Children’s Health Insurance Program (CHIP). Medicare ensured parity for telehealth services, which were reimbursed at the same payment rate as in-person services. A wider range of providers, including physical and occupational therapists and speech and language pathologists, were allowed to provide remote services. Patient satisfaction with telehealth is high, which will encourage practices to continue offering this service.⁶⁵

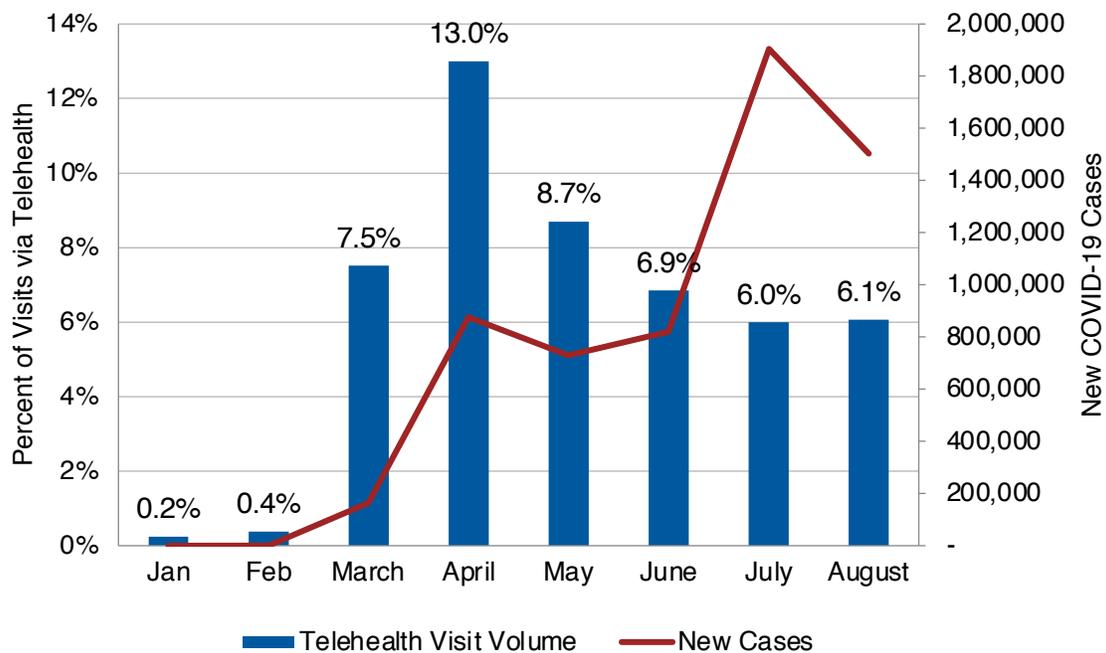
Access issues in primary care during COVID-19

The value of telehealth in primary care has been limited by patient access to the Internet, quality of care provided via telehealth, and continued reimbursement issues.⁵¹ In May, 68% of respondents to the PCC Survey reported that either they had received no payment for virtual

health care they had provided or that their bills were denied.⁵⁵ By the end of June, 34% of providers had reduced video- or audio-based care because of reimbursement challenges, and by August, 62% of respondents were providing a majority of care (between 60% and 70% or more) via in-person visits.⁶⁶ At the same time, offices were struggling to coordinate which payers were paying for which type of telehealth services under which circumstances because of variation in payment policies (Figure 1).

The Commonwealth Fund reported in August that telemedicine visits had plateaued at about 7% of the baseline number of weekly visits.⁴ But even this modest amount is likely to decline if CMS's reimbursement rules revert to prepandemic norms.^{6,59} The promise of telehealth is unlikely to be realized unless more private payers begin reimbursing for telemedicine delivery of care and CMS makes temporary and emergency expansions permanent.^{67,68} The cost of telehealth is lower than the cost of an office visit, because it does not require a physical space. The services rendered may be less comprehensive, and there is less additional administrative cost such as medical assistant support.⁶⁹ Although it is reasonable for Medicare and health plans to provide a slightly lower rate of reimbursement, it is not reasonable to return to the pre-COVID-19 world where these visits received zero reimbursement.

Figure 1. US Telehealth Visits and New COVID-19 Cases in 2020



Source: Telehealth Data from Fair Health New US Cases of COVID-19 Compiled by Author from <https://ourworldindata.org> from Oxford University.

Closures and restructuring in primary care due to COVID-19

As state stay-at-home orders issued in March 2020 expired beginning late April and May 2020, and many practices conducted outreach, patient volumes increased, although the levels were still inadequate to ensure financial recovery for primary care practices. According to the Commonwealth Fund, since mid-June, weekly visits, inclusive of telehealth and across practice areas, have been about 10% below the prepandemic baseline.⁴ As the fund's analysis focused on average outcomes, practices with weaker baseline financials may still be having trouble meeting expenses like payroll and rent.

Although some primary care practices have financially recovered from the period without in-person visits, a breakdown of primary care practice types shows the recovery has not been universal. For example, according to the Commonwealth Fund, FQHCs are experiencing less of a rebound in visits than other types of practices, with patient volumes around 20% below baseline, while pediatric practices are still operating with patient volumes 26% below prepandemic levels.⁴ Meanwhile, half of respondents to the PCC Survey in mid-June reported that patient volumes for in-person visits remained below 50% of baseline.⁵⁸

A microsimulation model that used data showing a low point in patient volumes in late March and early April, and which projected a plateau in patient volume rebound in mid-June (as happened), estimated “that primary care practices will lose more than \$65,000 per FTE [full-time equivalent] . . . from fee-for-service payments without any attempts at mitigation, even assuming that practices quickly pivot to providing telemedicine services.”⁶⁸ According to this model, the net loss to primary care providers in 2020 was almost \$15 billion.⁶⁸

As with hospitals, primary care practices under pressure are facing closure or sale. As early as May 2020, the PCC Survey data revealed that 0.6% of primary care practices had permanently closed.⁵⁵ By July 2020, the Physicians Foundation reported that 8% of respondents (22% being primary care physicians) had closed their practices due to pandemic stressors, amounting to about 3,500 primary care practices.⁶ By August, respondents to the PCC Survey were reporting that 14% of practices were either permanently closed, considering bankruptcy, or unsure if they would be solvent in four weeks.⁶⁶ A survey of Massachusetts practices from May through July reported that 47% of primary care practices indicated that practice closure was a possible response to the pandemic; the figure rose to 60% among independent primary care practices.¹³ The majority of respondents projected the timing of their practice closure to be December 2020 or sometime in 2021.¹³ A consortium of organizations, including the American Academy of Family Physicians (AAFP), the American Academy of Pediatrics, and the American College of Physicians, wrote to the secretary of Health and Human Services, Alex Azar, to raise awareness that “one of the most serious consequences of the COVID-19 crisis is the rapid collapse of the community-based primary care system in many parts of the country.”⁷⁰

An AAFP and Health Landscape study analyzing conditions in March and April predicted if conditions remained, there would be attrition of 58,000 primary care doctors—around 26% of the country's primary care doctors—by the end of June.^{56,71,72} This theoretical loss would translate into 1,841 counties in the United States suffering a shortage of primary care physicians, defined as having less than one primary care physician per 3,500 population.^{71,72}

At the time of this writing, the majority of primary care practices continue to be open, although in a diminished capacity. According to the PCC Survey from the end of September, 55% of respondents had furloughed practice staff, and 28% of practices were operating with permanently reduced staff sizes.⁵⁹ At the same time, primary care practices were depleted of cash reserves, potentially having to pay back student or business loans, exhausted after months of pandemic-related stress and uncertainty, and facing a backlog of patients who had forgone preventive and chronic care, as well as potentially additional waves of COVID-19 and upcoming flu season in early 2021. In the consortium's letter to Secretary Azar, the authors warned that "35% [of frontline primary care providers] believe most independent primary care practices will be eliminated after the first wave of the pandemic."⁷⁰

Value-based payment and COVID-19

With fewer in-person visits and elective procedures, momentum for transforming fee-for-service payments to value-based payments has accelerated.⁷³ Health care organizations participating in the Medicare Shared Savings Programs and accountable care organizations (ACOs) with capitated models rewarding health care outcomes were more likely to have had in place care coordination and population health programs to promote needed care and preventive health screening even with fewer in-person visits during the first wave of COVID-19.^{74,75} States also have been shifting Medicaid Advantage plans away from fee-for-service contracts, and some private payers have done the same.⁷⁶ At the same time, with fewer screenings and in-person chronic disease management visits taking place, CMS acted to protect ACOs and assuage fears of further negative financial implications of pandemic-related declines in health care utilization. CMS amended quality reporting requirements and reduced downside risk in its contracts with providing organizations.

Offering mechanisms for struggling practices to enroll in ACOs with up-front capitated and value-based payments is one way to financially aid practices, by paying them on the basis of the (risk-adjusted) number of patients they take care of (a flat per member, per month fee), and for the quality of those services (including health outcomes among patients), rather than for how many visits they achieve. With projected health care spending in 2020 down by \$75 billion, to \$575 billion, revenue from capitated and value-based care programs represents an important funding stream for health care, further rewarding those practices with population health, quality improvement, and care coordination programs in place to continue to work toward successful chronic disease management and meet benchmarks for preventive health care indicators even as in-person visits decline.⁷⁷⁻⁷⁹ Population health and chronic disease management services are increasingly offered by nurse managers over telephone/video, or via semi- or fully automated apps, to obtain labs, arrange preventive services, adjust medications, or enable electronic communications, including email to and from patients and providers, facilitating proactive outreach, follow-up, and adjustments to medications or therapeutic approaches that did not depend on in-person visits.

Conclusions

Market consolidation has been a feature of US health care for several decades. Although its impact on primary care prices has been less than consolidation's impact on hospitals and specialty practices, the evidence consistently shows that consolidation and subsequent high market concentration of hospitals and provider groups leads to higher prices.³³ There is little evidence, however, that consolidation is associated with improved patient satisfaction or quality outcomes.^{37,40}

In primary care, there has been a decrease in the number of independent practices over the past several years, with 49% of primary care providers in 2018 affiliated with a hospital system, up from 38% in 2016.⁴⁵

Current data suggest that many primary care practices are closing; it is possible that more providers will have to close their doors if they do not consolidate. The consolidation of solo and very small primary care practices can offer financial stability in case of illness or absence, and it can offer economies of scale in an increasingly complex regulatory and financial environment. Consolidation presents an opportunity to make investments in practices, raise capital and streamline with electronic medical records, optimize operations such as appointment scheduling, and streamline coverage. However, the shift can also lead to anticompetitive pricing behavior and price increases that are not tied to quality improvements. Moreover, consolidation has the potential to lead to "primary care deserts," with swathes of the population lacking access because of geographic distance from primary care providers.^{70,71}

The broad financial instability of primary care practices due to the COVID-19 pandemic was largely driven by the preponderance of the fee-for-service payment model. A push from Medicare through the Merit-Based Incentive Payment System, as well as many state programs, has only partially shifted from fee-for-service to value-based payments that focus on capitation and quality-based payments. In theory, if 100% of primary care providers were paid by capitation, there would have been little interruption in their cash flow during COVID-19; providers would have received a monthly payment from health plans regardless of patient volumes.

Overall, COVID-19 has shown:

- Despite primary care providers offering frontline support to tens of millions of Americans at risk for COVID-19, reliance on a fee-for-service model has been associated with financial instability during the pandemic. A continued shift toward capitated and value-based payments might stabilize the finances of primary care practices not affiliated with hospital systems.
- Telehealth, when reimbursed, can be an efficient option for primary care providers to offer to patients who do not need an in-person visit and have reliable Internet access, supplementing revenue for primary care practices and helping continuity of care.
- Providers have consolidated across health care in the past decades. Although consolidation is associated with higher prices, these price increases are relatively less for primary care

providers than for other specialties.⁴⁶ At the same time, larger practice size can lead to economies of scale and financial stability during a pandemic.

Therefore, we argue that policies to improve primary care access, efficiency, and quality in a post-COVID-19 world given provider consolidation would continue the shift to capitated and value-based payments to reduce the need for consolidation; make permanent telehealth payments for providers, retaining the flexibility to create a fair reimbursement rate that takes into consideration the lower fixed costs of telehealth; and monitor and balance the natural progression of primary care provider consolidation into larger, more financially stable groups, while avoiding overconsolidation that can decrease access by expanding geographic distance from a primary care provider and extract anticompetitive prices from the populations they treat.

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Public Health Centers in Japan's COVID-19 Response and Recovery

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Japan's public health centers have played a critical, if understated, role in the country's response to and recovery from the COVID-19 pandemic. Japan experienced several swells of COVID-19 throughout 2020 and after the country's early exposure to the disease through the notorious *Diamond Princess* cruise ship outbreak.¹ Yet Japan notably maintained a low mortality rate, despite its population being older than all other Organisation for Economic Co-operation and Development (OECD) countries, and age being a major known risk factor for COVID-19 morbidity and mortality.^{2,3} While the United States directed its response through the national Centers for Disease Control and Prevention (CDC), Japan focused its response through regionalized public health centers that acted as "miniature CDCs" within their respective communities. Japan's experience demonstrated the potential advantages and disadvantages of carrying out critical functions of infectious disease response, and simultaneously promoting population health more broadly, through regional public health centers. As such, Japan's experience highlights key features and improvements that should be carried forward in countries seeking to promote localized population health management during a pandemic.

Public health centers, primary health care, and population health in Japan

Japan's health system is well known for achieving positive health outcomes, including the highest life expectancy and lowest rate of obesity amongst OECD countries.⁴ Japan nevertheless experienced a rising burden of chronic disease, which prompted its adoption of a primary prevention strategy called Healthy Japan 21 (HJ21)—a national health campaign to promote healthy lifestyles through diet and exercise, reduced smoking and alcohol consumption, and improved mental health and

reduced stress.⁵ In addition, Japan continued its extensive secondary prevention program incorporating health checkups and screenings, supported by a universal health insurance system with a uniform fee schedule but also no requirement of a primary care gatekeeping function in order to access specialists.

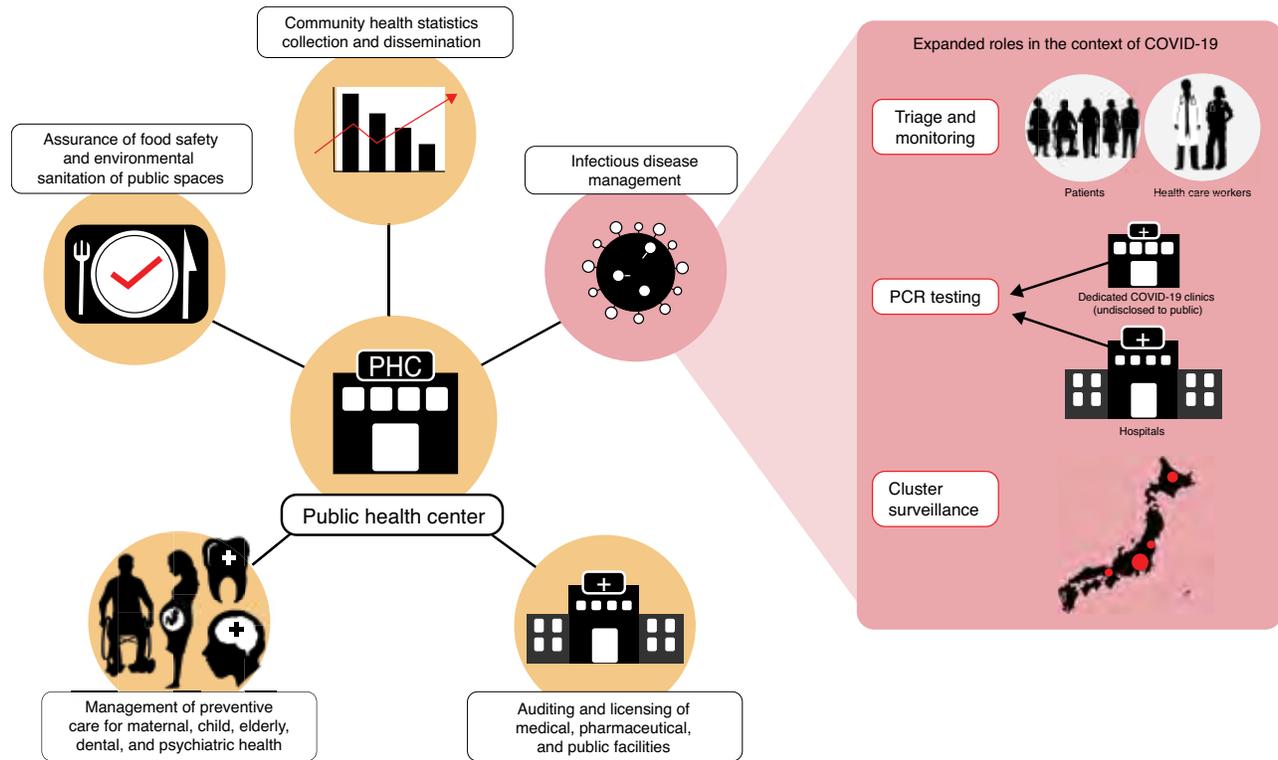
Japan, unlike many OECD countries, does not have a robust cadre of primary care physicians, as the vast majority of physicians are specialists and primary care can be delivered by specialists with limited training in primary care. In Japan, primary care is delivered most commonly at community clinics, but these are often bypassed because Japanese citizens and resident noncitizens who are enrolled in Japan's statutory health insurance system can freely access various areas of the health care system.⁶ Amidst this fragmented structure, the Japanese public health centers play a critical role in population health.

Japan's public health centers, or *hokenjo*, have been part of Japan's health care system since the 1937 Public Health Center Act.^{7,8} The centers were tasked with administrative roles in food sanitation, environmental health, and medical and pharmaceutical affairs—including infection control, nutrition, maternal and child health, health crisis management, support to investigate and treat rare diseases, early detection of domestic violence, and overseeing hospitals and pharmacies (Figure 1). The public health centers are directed by a certified physician who oversees the three major divisions: the General Affairs Division, which collects vital statistical data and audits medical facilities; the Life Environment Division, which monitors food safety and sanitation of public spaces and audits pharmaceutical facilities; and the Health and Prevention Division, which focuses on infectious disease control, nutritional improvement, elder care, and primary care.

The public health centers are governed by the national Ministry of Health, Labor, and Welfare (MHLW), operated as local governmental entities across Japan's prefectures, directed by a physician, and staffed by a team of interdisciplinary professionals that includes public health nurses, midwives, veterinarians, pharmacists, and clinical laboratory technicians. The centers numbered 826 as of 1966 (with 1,173 physicians), but due to the 1994 Community Health Act that unified and consolidated them, they numbered 469 as of 2020 (with 840 physicians as of 2008).^{9,10} Each center serves anywhere from 300,000 to over a million regional residents to provide a wide range of public health services.

Prior to the COVID-19 pandemic, Japan's public health centers played a major role in the management of tuberculosis. Tuberculosis was the leading cause of death in Japan in 1950, and the incidence of tuberculosis remained high over the past half century compared to other developed countries. Tuberculosis was classified as a type 2 disease under the Infectious Disease Act, which identified five types of infectious diseases based on their severity, infectivity, and transmission route.¹¹ Type 1 infectious diseases were considered the most serious and include Ebola hemorrhagic fever. Patients infected with either type 1 or type 2 diseases were required to be admitted to an isolation ward, regardless of the severity of their illness. Though several diseases were classified as type 1 or 2 during the 21st century—such as Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), H5N1, and H7N9 viruses—tuberculosis was the only one that was endemic to Japan.

Figure 1. Organization and Functions of Public Health Centers in Japan



The core roles of public health centers in Japan range from environmental and food safety to preventive care. During the COVID-19 pandemic, the public health centers' role in infectious disease management expanded into triage, testing, and tracing clusters of infection. Illustration by Ryoko Hamaguchi (Harvard Medical School).

For tuberculosis patients, Japan's Infectious Disease Act mandates that infected patients be isolated and receive inpatient treatments, covered by public subsidies, until cleared as no longer infectious. Additionally, close contacts of patients with tuberculosis are given health checkups to prevent spread of the disease. In Japan, when there are concerns about a tuberculosis outbreak, clinicians notify the local public health center where public health nurses visit patients to assess them and trace their contacts. In addition, the public health nurses provide guidance on medical treatment as well as financial coverage from the government. Public health centers are also involved in the process of tuberculosis testing and hospital isolation. These tuberculosis-oriented activities became immediately relevant to Japan's response to COVID-19.

Japan's response to the COVID-19 pandemic through public health centers

Since the initial identification of COVID-19 in Wuhan, China, and Japan's involvement in containing the outbreak of the disease aboard the Diamond Princess cruise ship, Japan's public health centers served a central role in the country's overall pandemic response. The public health centers specifically managed three critical responsibilities: patient triage, COVID-19 testing, and regional cluster surveillance (Figure 1).

Japan's public health centers established telephone-based triage. If a patient felt unwell or suspected exposure to COVID-19, their initial point of contact was not a walk-in visit to a primary care office or emergency department, but rather a call to a local call center, which was either housed within or in close communication with a public health center.¹² Under the direction of the MHLW in early February 2020, public health centers in each prefecture established regional call centers (formally named Returnee and Contact Call Centers), which were publicly available phone lines that connected callers to a triage desk primarily operated by public health center staff. Citizens were initially advised to contact these call centers if they met certain criteria, such as prolonged fever (37.5 degrees Celsius or more for four days or longer), fatigue, and respiratory symptoms, or if they had risk factors such as advanced age and comorbidities (e.g., diabetes, heart failure, respiratory illness, immunocompromised status), averting overload at emergency departments and clinics.

Following this contact-free initial triage, the public health center directed a subset of patients to undisclosed COVID-19-dedicated outpatient clinics established within select regional hospitals, for further in-person assessment by a medical provider. From February 1 to March 31, 2020, the triage system recorded a total of 313,475 phone-based consultations and 16,730 visits to COVID-19 clinics across the nation.¹³ Once patients were assessed and confirmed to be COVID-19 positive, the public health center facilitated transfer to specified hospitals equipped with the resources, personnel, and experience to manage inpatient-level infectious disease and respiratory distress. In response to the shortage of resources in some regions, some public health centers took additional roles beyond their official core functions, including but not limited to providing physical patient transportation to clinic sites and doubling as an occupational health equivalent for hospitals managing infections among health care workers.

Finally, the public health center was also tasked with the larger epidemiological role of implementing Japan's "cluster-based approach," which placed focus on proactive contact tracing and isolation of possible contacts from small regional clusters that were hypothesized to be driving community-based transmission in Japan. The experience centers had with contact tracing of tuberculosis cases was thereby applied to the COVID-19 outbreak, with the public health center a common node of external triage for all regional civilians; a liaison and consultant for regional hospitals; and the workhorse in cluster surveillance and contact tracing for entire geographical regions.

Japan's public health center approach to contact tracing differed from some of its peers through its lower reliance on technology and its emphasis on maintaining privacy of the patients as well as businesses or regions affected by clusters of COVID-19 infection. Hence,

while emphasizing the critical role of contact tracing spearheaded by several other countries, Japan's response was fundamentally different from efforts in peer countries such as Germany and South Korea. Japan's focus on privacy was thought to build trust with the public and ensure people would be forthcoming about their symptoms and contacts.

During the first small wave of infections in Japan, public health centers focused on testing most persons without involvement of the traditional health care system. At the end of March 2020, a new wave of cases created bottlenecks for testing, leaving possible asymptomatic COVID-19 cases untested and in their communities.¹⁴ Hospitals designated for COVID-19 reached capacity, as COVID-19-positive patients with mild disease filled beds for multiple weeks during mandatory hospitalizations, while more severe cases of the illness crowded ambulance bays. As COVID-19 hospitals began to turn away non-COVID-19 patients to preserve beds, and conversely, non-COVID-19 hospitals shut doors on any patient at risk of having COVID-19, a severely unbalanced and wasteful ecosystem emerged; in a single catchment area, one hospital could face critical bed shortages while a neighboring hospital had empty wards. Once COVID-19 patients began overflowing into nondesignated hospitals, the latter hospitals were unprepared to meet the infection control needs of this pandemic, lacking the resources, space, and systems that had been previously allocated to designated hospitals to protect both patients and health care workers from the spread of COVID-19.

A national state of emergency was declared in Japan in mid-April 2020, which resulted in restructuring and fortification of the strained hospital system. Through the strong joint advocacy of the public health centers and local governmental bodies, the initially narrow triage pathway—built between the public health centers and an exclusive group of specialized hospitals—was restructured into a more expansive network of downstream care sites. Public health centers began to systematically allocate patients to a wider network of hospitals, including privately owned facilities, matching patients to appropriate designated or non-designated hospitals by symptom severity and resource availability, while urging mild and asymptomatic cases to stay home or in converted hotels without a mandatory hospitalization.^{15,16} The role of the public health centers was also modified by sharing its gatekeeping role of COVID-19 testing with commercial testing facilities after the latter were included in the national health insurance coverage. Diagnostics were expedited by relaxing testing criteria to include those with mild symptoms, so that they could be triaged faster if they clinically worsened.

Japan subsequently experienced a gradual plateau in cases and an unexpectedly low death rate. Over the summer of 2020, cases, testing rates, and test positivity initially spiked, then decreased into the autumn before a winter surge. Japan's daily number of COVID-19 deaths never exceeded 50 deaths per day in 2020, in a country with a third of the population of the United States where daily deaths exceeded 3,000. While Japan's ability to control the outbreak was likely multifactorial, it appeared that Japan's system of regionalized public health—prepared from years of tuberculosis management and contact tracing, and bolstered by the rapid adjustments made during a surge of COVID-19 cases—played a role in minimizing the damage from the pandemic. Thus, Japan's model, evolving rapidly in parallel with the virus's trajectory, offered key lessons about the strengths and potential pitfalls of deploying similar systems amidst a public health crisis.

Evolving the role of public health centers in the wake of COVID-19

In Japan, the public health center was the critical resource for achieving a local triage system that organized the flow of patients from the community to the most well-equipped hospitals, many of them with a wealth of experience with infectious disease and respiratory care through their management of patients with active tuberculosis and other communicable illnesses. The public health centers, with a much smaller radius of surveillance than national public health agencies such as the US CDC, were the key to Japan's approach in quelling the early phase of the virus by nipping local clusters of infections in the bud. Once the increasing caseload exposed the inefficiencies of this system, the regionalized public health centers—in coalition with their local hospitals—were the first to identify these pain points and rapidly restructure a deeply ingrained playbook, including allocating patients across a wider network of hospitals to boost health care capacity, as well as creatively repurposing nonhospital facilities to free up beds for more severe cases. With their deep understanding of its local community as well as its affiliated hospitals and their respective capacities and needs, public health centers were able to mobilize change in a much more nimble and customized fashion than a large, centralized public health entity could. Japan's regionalized model may be a powerful advantage in future infectious disease outbreaks, in which epidemiological trajectories demand rapid, coordinated, and locally responsive pivots in approach.

Despite its positive contributions in Japan's COVID-19 response, the nation's regionalized public health framework still had many cracks in its system—inefficiencies that, if not addressed, may hamstring its response in future public health crises.

First, early in the pandemic, when short-staffed public health centers were tasked to serve as the initial gatekeepers to COVID-19 care by fulfilling multiple roles on top of their standard duties, they became a rate-limiting step to scaling up the response as the situation worsened. In Japan's case, with the onset of COVID-19, public health centers were quickly charged with numerous roles that both leveraged existing capabilities (such as cluster surveillance) and created new capacities (such as patient triage). As COVID-19 case numbers climbed, Japan's public health centers were spread too thin to maintain an adequate level of response. Executing a sustainable regional public health network amidst a pandemic required early redistribution of workload to a wider network of facilities, such as delegating testing to private testing centers and hospitals.

Second, despite the public health centers' leadership in coordinating the local health care response, communication and general sharing of data within and between these systems were slow. In Japan, handwritten faxes and paper charts remained the norm, severely delaying and complicating sharing of medical and epidemiological data among stakeholders within and between different prefectures.^{17,18} Initiatives for data digitization, data transparency, and streamlined electronic communication were needed to bolster the public health centers' ability to coordinate various hospitals and clinics into united action.

Third, the ability of regional public health centers to act was dependent on the network of hospitals, which began the pandemic with an inadequate distribution of resources. The lack

of infectious control expertise and material resources such as negative pressure rooms within many nondesignated hospitals caused them to hesitate to accept COVID-19 patients when public health centers attempted to recruit them into COVID-19 care. COVID-19-designated hospitals, on the other hand, faced frustrating situations where they possessed the beds and machines for intensive care, but did not have access to intensivists who worked at nondesignated sites. Such lopsided resource allocations were not only ineffective but also wasteful, within a regionalized system that relied on a limited number of hospitals to absorb a large number of infections. This gap may be bridged with expedited sharing of protocols for infection control and health care worker protection, as well as creative sharing of human resources through modalities such as tele-consultations.

Finally, building a regionalized public health system takes a village, and Japan lacked adequate national support to keep its system sustainable and effective with insufficient government investment into the public health centers and the public health sector in general. With Master in Public Health programs in existence only for the past two decades, and only five institutions accredited as professional graduate schools, public health remained relatively undervalued in Japan as an academic discipline—a stark contrast to the critical importance of public health as an integral pillar of the nation’s health care system.¹⁹ When the pandemic hit Japan, the public health centers were called on to dramatically expand their already wide-ranging purview in the background of dwindling numbers of public health centers in the country, without concomitant increases in staff to serve larger areas. Public health center employees were severely overburdened by the vast responsibilities in a time of great uncertainty, stretching the public health centers dangerously thin. Any future implementation of a similar regionalized public health model demands proportional support by the government through investment in public health education and expansion of human resources to match the regional need.

Conclusions

Public health centers embody many of the core principles of high-quality primary health care that have been critical during the health crisis. Japan’s public health centers provide community-based care that promotes the values of first-contact accessibility and person-centeredness. Given its many functions, the public health center promotes comprehensiveness and coordination. Finally, the Japanese public health center provides continuity for its local population, particularly during the pandemic through its team-based care model.

Japan’s unique regionalized public health model has been the key to the country’s COVID-19 response, while also maintaining their many functions to keep communities healthy and protect the well-being of their local communities. Relatively compact and deeply integrated into the local community and hospital network, this system appeared to have been one of the drivers of Japan’s success in weathering the COVID-19 crisis. As such, Japan provides an example for countries looking to employ locally responsive public health centers to lead regional coordination, surveillance, and triage during a pandemic. As Japan enters a “new normal” amidst the ongoing pandemic, it will inevitably need to grapple with the aforementioned challenges to maintain the efficacy of its public health infrastructure.

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Community Health Workers in the COVID-19 Response and Continuation of Primary Health Care

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Community health workers (CHWs) are increasingly recognized as a critical component of a strong primary health care system. Forming part of the health team with nurses, physicians, and public health officers, CHWs are hired from their own communities and have been a “human connection” for some of the most vulnerable.^{1,2} CHWs extend the reach of primary health care systems to communities otherwise underserved or unserved by formal health systems. CHWs accomplish this by delivering primary care services in homes, community institutions, or peripheral health posts.³ They provide a range of services that vary from health education and promotion to curative patient care depending on the country’s epidemiological priorities, health system structure, and political context.⁴

The role of CHWs in primary care practice

CHW scope of practice in primary care varies by country. CHWs across geographies receive training, varying in duration from weeks to months, in carrying out basic health care and social tasks. In high-income countries, CHWs often provide support and education to patients living with chronic illnesses, help screen for noncommunicable diseases (NCDs), and connect patients to social and financial support services.^{5,6} In low- and middle-income countries (LMICs), in addition to health education and health promotion, CHWs often provide diagnostic and curative services for common infectious diseases (e.g., treating uncomplicated malaria); reproductive health (e.g., delivering contraceptives), and linkage to maternal, neonatal, and child health (MNCH) care (e.g., tracking the health of expectant mothers); mental health and psychosocial support (e.g., screening for major depressive disorder); support for chronic

illnesses, including HIV, tuberculosis, and NCDs (e.g., supporting treatment adherence and reducing loss-to-follow-up); and referrals to encourage appropriate utilization of health services (e.g., immunizations).^{7,8} They also address the social determinants of health, such as ensuring patients have access to social services (e.g., employment, transportation, insurance).

Community-based primary health care provision, including through CHWs, has been shown to have substantial impact on treatment seeking as well as maternal, neonatal, and child health around the world.⁴ A review of community-based interventions in Asia and Africa, including those delivered by CHWs, showed that these interventions led to a significant increase in care-seeking behaviors for childhood pneumonia and diarrhea, as well as 32% reduction in pneumonia mortality.⁹ In Liberia, the National Community Health Assistant program was able to significantly increase access to treatment for children with malaria and other infectious diseases in remote rural counties.¹⁰ A comprehensive review by Henry Perry and colleagues showed that provision of care in the community, especially care focused on antenatal, maternity, and preventive care, decreases maternal morbidity and mortality.¹¹ Additionally, provision of neonatal care including breastfeeding and nutrition interventions, immunizations, and infectious disease prevention and treatment can improve nutritional status and reduce neonatal morbidity and mortality.¹² Community-based workers like CHWs can reduce not only morbidity but also mortality from major causes of childhood illness in low-resource settings, including malaria, diarrhea, pneumonia, vaccine-preventable illnesses, and malnutrition.¹³ A review of the impact of CHWs delivering curative interventions for malaria, pneumonia, and diarrhea on child morbidity and mortality in sub-Saharan Africa found that national CHW programs can reduce mortality by up to 63% when both curative and preventive services were provided.¹⁴ Brazil integrated community health workers into family health teams with nurses, with a focus on lowering the number of patients with hypertension and diabetes who dropped out of care. This has been associated with a 15%–20% reduction in mortality from heart disease and strokes.¹⁵ In 2005, Ethiopia launched its Health Extension Program, rapidly hiring, training, and equipping more than 35,000 community health extension workers to staff 17,000 rural health posts. This increased geographic access to health services from 64% to 92%, and significantly improved the coverage of prenatal care, contraceptives, and antibiotics for acute respiratory infections; during this same time there was an acceleration in under-five mortality reduction.¹⁶

However, all CHW programs are not equal. A 2020 study of exemplar CHW programs in Bangladesh, Brazil, Ethiopia, and Liberia revealed investments in five key systems are critical to developing effective CHW programs. Each of the exemplar CHW programs investigated followed a set of best practices identified in the recently released WHO guidelines to optimize CHW programs.¹⁷ These guidelines, along with insights from exemplar CHW programs, highlight investing in five foundational system components (also sometimes referred to as the 5 Ss), regardless of contextual factors (Box 1).¹⁸

Box 1. The 5 Ss: Effective CHW Programs Invest in Systems, Not Just the Services They Deliver

Selection: Strong engagement from the community contributes to more effective CHW programs. CHW selection systems are rooted in the communities they serve, and favor women. Strong CHW density (ratio of CHWs per population) can be sufficient to equitably provide coverage for the entire population.

Skills: The training system, which includes preservice training and continuing education, is standardized at the national level. Minimum standards are set for skills to be acquired upon completion of the training. All CHWs satisfactorily complete competency certification processes prior to beginning their work as CHWs.

Supervision: A robust supervision system, in which supervisors—often frontline clinicians like nurses—are trained to provide CHWs supportive supervision on a regular basis, strengthens performance and improves outcomes.

Salary: Strong payment systems can ensure CHWs are paid adequately and in a timely manner, reducing turnover and improving CHW performance. CHWs are contracted to receive financial remuneration consistent with the job demands, complexity, number of hours, training, and roles. Opportunities for salary increases are available commensurate with experience, advancement in skills, and completion of additional training (including opportunities to progress to higher-level positions in the health system).

Supply: CHWs require a strong supply system that ensures they are properly and regularly supplied with high-quality commodities and consumables needed to deliver health care services.

Source: Recommendations. Exemplars in Global Health. Accessed February 16, 2021. <https://www.exemplars.health/topics/community-health-workers/cross-country-synthesis/recommendations>.

The role of CHWs during the COVID-19 pandemic

CHWs are crucial to both key public health objectives of health systems during the COVID-19 pandemic: first, to contain the direct effects of COVID-19 by stopping transmission, and second, to address the indirect effects of a pandemic on routine primary health care by preventing interruptions to essential services like vaccinations, antenatal and postnatal care, infectious disease prevention and treatment, and noncommunicable disease screening and treatment.^{3,19} Health systems with exemplar CHW programs, such as those in Ethiopia, Liberia, Brazil, and Bangladesh, demonstrate that the best emergency response systems are actually resilient primary health care systems that can respond rapidly and effectively to pandemics like COVID-19 through deploying networks of trusted CHWs to prevent new infections, detect cases, and educate their communities.^{3,19} CHWs can also play an important role in disease surveillance, outbreak detection, active case finding and screening, and epidemic response (Box 2).²⁰⁻²³ Many CHWs visit each household in their community on a regular basis, providing an opportunity to do active case finding and screening for COVID-19 symptoms at the community level. For example, in the first weeks after its first case, South Africa trained and equipped 27,000 community health workers previously serving HIV and TB patients to go door-to-door to screen more than 11 million residents (20% of the country's population) for COVID-19 symptoms, referring those with positive screens for testing at primary care clinics.²⁴ When CHWs are effectively integrated into national health systems and equipped with data collection tools and training, they can submit epidemiological surveillance data to national monitoring systems, alerting subnational and national health systems of outbreaks while they are still small and saving valuable time in mobilizing an effective response,²⁵ and thus expediting appropriate infection prevention and treatment as necessary.

CHWs are in a unique position, based in the community, viewed as trusted deliverers of education and care, and serving as a link to facility-based care. Some of these roles reflect lessons from earlier epidemics, such as Ebola, as well as emerging lessons from the COVID-19 pandemic. In the case study on Liberia presented next, we describe these dual roles, their overlapping nature, and the strategies needed to achieve success in CHWs contributing to direct COVID-19 response and supporting work to prevent and respond to drops in primary health care demand and delivery. We begin with a review of how Liberia's primary health system learned lessons about preparedness and response from the country's 2013–2016 Ebola epidemic.

Box 2. Roles for CHWs in Responding to COVID-19 and Preventing Disruption to Primary Care Services²³

Prevent	Educate communities regarding signs, symptoms, and transmission routes, as well as promoting personal preventive measures such as social distancing, hand hygiene, coughing/sneezing into elbows, and water, sanitation, and hygiene interventions.
	Organize hand hygiene stations in communities and health facilities.
	Support, lead, or reinforce community and facility-based infection prevention and control (IPC) measures, such as construction of triage areas and use of personal protective equipment (e.g., face masks, gloves, gowns).
	Support preparation of health systems and communities for the eventual introduction of COVID-19 vaccines in development, including outreach to high-risk groups.
Detect	With supervision from nurses, identify signs and symptoms in community members, support safe collection in communities and health facilities of samples, and support rapid transport to laboratories for analysis, thus reducing risks of nosocomial transmission.
Respond	Communicate rapidly and effectively to residents.
	Support self-isolation and monitor patients in the community while ensuring delivery of food, social, and medical support.
	Monitor patients for clinical deterioration and support rapid referral of individuals who require hospitalization, reinforcing links between the health system and communities.
	Support contact tracing, symptom reporting, and monitoring of contacts of COVID-19 patients to ensure access to testing and treatment for those who develop signs and symptoms.
	Implement or support disinfection of high-risk surfaces in communities using appropriate IPC supplies and procedures.
	Sustain routine primary health care services (e.g., vaccinations and integrated community case management of young children with malaria, pneumonia, or diarrhea).

Liberia: Keeping primary health systems resilient, from Ebola to COVID-19

During the 2013–2016 Ebola outbreak in West Africa, underresourced health systems, weakened from years of conflict, were confronted with a pathogen that was previously unrecognized in the region. Health care workers, at the front lines, were among the first stricken and were often unprotected, thus limiting the human resources needed to combat the outbreak and maintain services. In Liberia, a country of 4.5 million people, the virus infected more than 10,000 people and claimed the lives of 8% of its health workers.²⁶ Public distrust of government and lack of confidence in the safety of health facilities kept many people from seeking routine health services, including prenatal care and treatment for infectious diseases.²⁷ There was a 140% increase in patients not receiving treatment for malaria, increasing the indirect mortality associated with the outbreak.^{27,28}

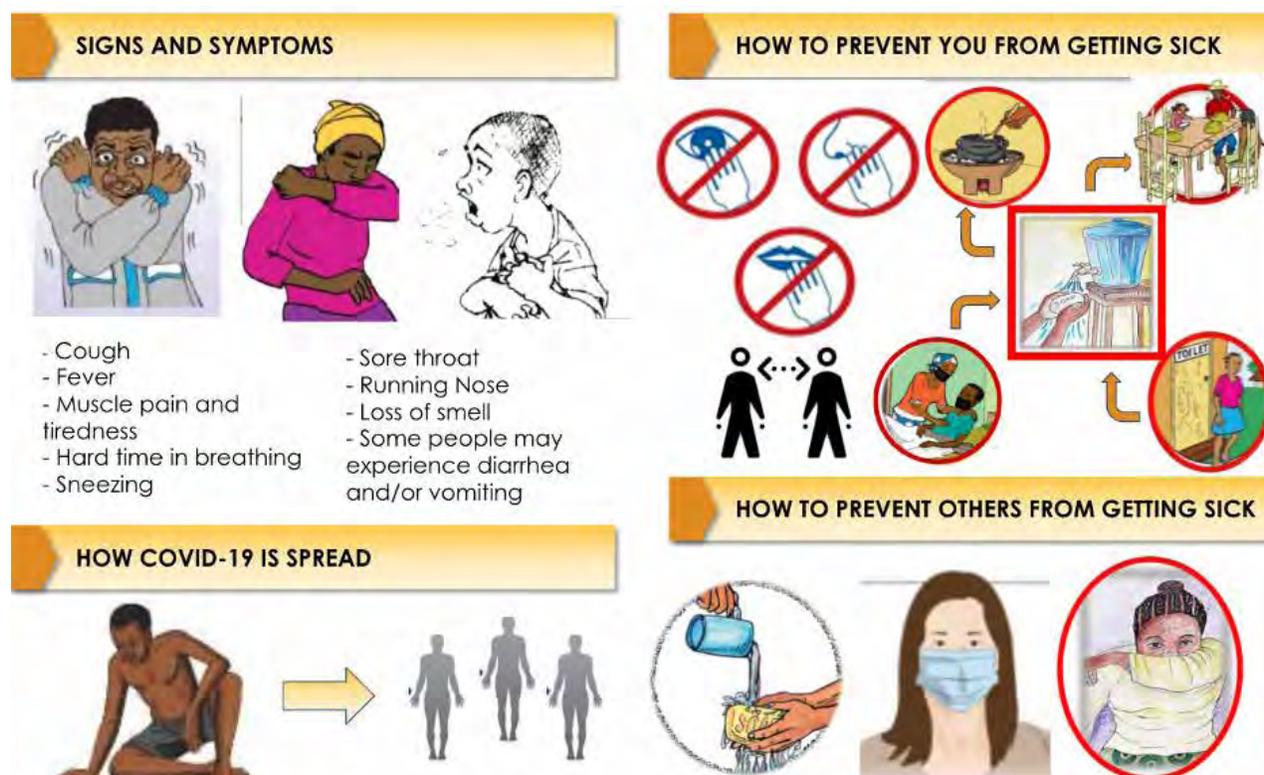
In September of 2014, models indicated that without interventions, up to 1.4 million people could be infected by January 2015.²⁹ Ultimately, control of the outbreak relied on strengthening testing, contact tracing, and infection prevention and control (IPC) in primary health care facilities and communities.³⁰ CHWs were central in this effort. More than 10,000 community health workers were mobilized, and they worked to educate communities on preventing the spread of the virus, to identify cases and refer them for testing, to trace contacts, and to facilitate early treatment.³¹ Investments in CHW training resulted not only in early detection of cases and prevention of transmission, but also in continuity of essential health services. Prior to and during the Ebola epidemic, in Konobo, a district in Grand Gedeh County in southeastern Liberia, the government of Liberia, with support from Last Mile Health, had been implementing a program in which primary health care services were extended from a primary health care clinic into villages by nurse-supervised, salaried CHWs. The clinic and community health teams implemented training on IPC measures. This included training and equipping midwives, nurses, and community health workers with appropriate personal protective equipment (PPE) to promote care seeking among mothers, deliver clinic and home-based prenatal care, and provide safe labor and delivery services at the facility level. Last Mile Health and the government had invested in these strong everyday systems in Konobo including supply chains, supportive supervision, and salaries for health workers for years. Due to this investment, facility-based delivery during the epidemic dropped by only 3% in Konobo compared to 300% nationwide.³² While treatment for malaria was disrupted across other parts of the country, malaria treatment remained steady in Konobo district because supplied, supervised, and protected community health workers delivered it to homes in their communities.³²

In 2016, Liberia's Ministry of Health, armed with the lesson of the need to have a primary health care system that reaches the most vulnerable before threats emerge, and just under a year after the last case of Ebola in the country, revised its prior community health policy and launched the National Community Health Assistant Program. This policy was supported by seven implementing partners with a commitment to a standardized model of community recruitment, monthly payment, training curriculum and service delivery, supervision by professional health workers (i.e., nurses or physician assistants), and the consistent stock of

life-saving medications and supplies necessary for diagnosis and treatment. Integral in the service delivery package were the components of community-based surveillance for infectious diseases, including hemorrhagic fever, but also routine services such as provision of family planning, health promotion for care of pregnant women, and the community case management of childhood illnesses, namely diarrhea, malaria, pneumonia, and malnutrition. Between 2016 and just prior to the COVID-19 pandemic in 2020, Liberia’s National Community Health Assistant program hired, trained, and equipped more than 3,500 CHWs across Liberia, linking them to 316 primary care clinics serving close to 700,000 rural people—approximately 70% of the rural remote population.³³ Between 2016 and 2020, these CHWs conducted 3.6 million home visits; provided more than 1.2 million treatments and screenings for children with malaria, pneumonia, diarrhea, and malnutrition; and increased access to reproductive and maternal health services. CHWs test and treat 48% of Liberia’s rural children with confirmed malaria in their communities.¹⁰ Importantly, the community health assistant program had established a community event-based surveillance system through which CHWs had helped identify more than 5,000 potential public health outbreaks (e.g., Lassa fever) of significance.

Given the prominent role CHWs play in ensuring access to routine primary health care, as well as their crucial role in the Ebola response, when the first case of COVID-19 in Liberia was confirmed by polymerase chain reaction (PCR) on March 16, 2020, the country was prepared to leverage its national CHW system to play a vital role in both the direct COVID-19 response and ensuring continuity of primary care. In anticipation of a pandemic in January 2020, Liberia was proactive in reinstating an Incident Management System and began health

Figure 1. CHW Community Education Job Aid³⁵



promotion awareness on coronavirus with printed posters at centralized areas. In March, Liberia established both community engagement and risk communication pillars, bringing together partners and government stakeholders, including the Community Health Division. The role of community health workers in the COVID-19 response was designed to be one inclusive of prevention, detection, and response and emphasizing continuity of primary care (Table 1).²³ The first priority was to ensure the safety of primary care workers, including CHWs.

Safety of health workers

Central to the design of the role of health workers in the response was the prioritization of their safety. During the Ebola pandemic, it had been seen that provision of risk-appropriate PPE and training on how to use it was key in keeping health workers safe. Whereas many countries struggled to procure PPE and equip their community health workers,³⁴ Liberia's Ministry of Health made the commitment at the onset of the COVID-19 outbreak to include CHWs and their supervisors in the projection, procurement, and distribution of PPE, alongside all of its frontline health workers. PPE became integrated into the already scheduled bimonthly restocking of CHW supplies through supervision visits. Additionally, these workers, along with those working at health facilities, were trained on how to don and doff the PPE appropriately, and which PPE is required for which services. This vigilance decreased the likelihood of health workers falling ill and transmitting infection to others, thus serving to maintain community trust in health workers and preventing stigma due to perceived increased risk of workers as vectors of transmission.

Prevention

Community health workers have been equipped with job aids and training on facts about coronavirus transmission, symptoms, and treatment to combat misinformation that may impact health-seeking behaviors and prevent uptake of public health measures (Figure 1).^{35,36} As trusted members of the community, CHWs reach out to community members during routine household visits and through meetings with community leaders in formalized community health committees that assist in implementing community-wide activities to support the health of their communities. They activated handwashing stations with counseling on appropriate handwashing technique and frequency, educate community members about respiratory hygiene, and emphasize masking and social distancing.

Detection

Using a community case definition with a series of questions, CHWs, from six feet away and while wearing a mask, screen patients and household members for possible COVID-19 infection as the first step during all routine household and sick visits. If the screening is positive and thus indicates a possible COVID-19 case, then the CHW acts as a link to the surveillance team for activation of testing. The CHWs create a list of contacts of the patient, counsel on isolation, and work with nurse supervisors to develop a monitoring plan for the development of symptoms among these contacts that would necessitate further testing.²³

Response

Even before a suspected patient is identified, CHWs work with community leaders and members to develop a response plan for the 24 hours after one is identified. Each home is also supported to work through an isolation plan for household members in the event someone were to fall ill or to identify barriers to safe isolation that would necessitate isolation outside of the home supported by the community. Once a trigger is identified, the CHWs work with family and community to implement these plans. While awaiting testing or referral to a facility, the patient and identified caretaker would be provided masks, and gloves for the caretaker, with instructions to always mask when in same room, to minimize time spent within six feet of one another, and for the caretaker to use gloves for any necessary direct contact with the patient or the patient's belongings.

Continuity of primary health care services

During the Ebola outbreak, much care was taken to design and implement modified clinical care protocols that would allow CHWs to continue providing primary health care in the community in situations where PPE was not available or where there were concerns about appropriate PPE use. Coupled with further training on the nature of Ebola transmission and protective measures, CHWs were able to continue working during the outbreak. In an era when caregivers were fearful of bringing their sick children to facilities, they continued to get care from CHWs.³⁷ Similarly, protocols for service delivery were altered during COVID-19 to prioritize the safety of health workers and community members, while balancing the need for continued proximal, life-saving treatment. If a patient or household member is identified as a suspected COVID-19 patient during screening, making the patient a contact, then a six-foot distance is maintained at all times between provider and patient and caregiver. If screening is negative, then the CHW proceeds with the visit following no-touch protocol for services that do not necessitate touch, such as providing medications, which can be done through careful placement of medications for the caregiver to pick up once the CHW has backed away to more than six feet from the medication. However, in the event that the CHW must get closer to perform a service, such as a malaria rapid diagnostic test, the CHW puts on eye protection (goggles or face shield) in addition to the mask and the usual gloves worn as standard precautions. Some protocols have been altered to involve the caretaker in providing the diagnostic services that require touch, such as checking for pitting edema as a danger sign of malnutrition.

Similar to the altering of protocols just mentioned, there were a few instances where substitutions of treatment were offered. Before COVID-19, administration of the contraceptive subcutaneous depot medroxyprogesterone acetate by CHWs was being pilot tested with plans for future scale. Altered COVID-19 protocols prevented the CHWs from entering homes, meaning that injections would have had to take place outside patient homes, limiting ability to maintain patient confidentiality and thus increasing potential for stigma. Due to this, and to minimize potential of further exposure to asymptomatic cases, CHW provision of this service was discontinued and patients were given the option of going to a facility for injectable family planning or to transition to oral contraceptives or condoms, both of which remained available at community level. While options were made available for those who wished to continue family

planning, this cessation removed the preferred method of contraception for some and required transfer of some patients to unpreferred methods or travel to the facility for ongoing injectables.

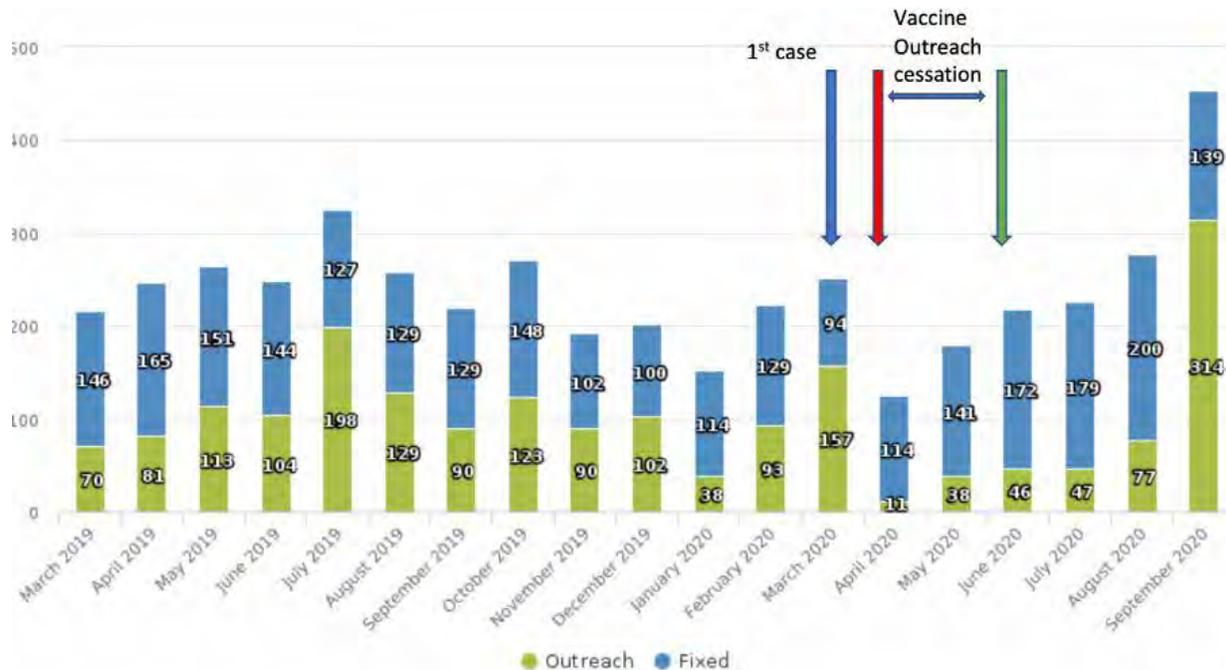
Responding to or mitigating drops in primary health care

Nationally, there was a decrease in health-seeking behavior with an 18% drop in antenatal care and facility-based deliveries.³⁸ However, only 1% of community members served by CHWs reported not going to the facility because of a fear of COVID-19, with 97% of 603 patients who reported needing to go to a facility successfully seeing a health provider at the health clinic.³⁸ Additionally, in communities serviced by CHWs, routine household visits continued under modified protocols. Data on routine household visits showed a small dip in March but with recovery to pre-COVID-19 numbers by May. These routine household visits served as an important monthly touchpoint for provision of counseling and health promotion and an opportunity for actively identifying cases through screening for potential COVID-19. Finally, according to unpublished findings by Rozelle and colleagues, approximately half of rural children in Liberia received diagnostic and treatment services for malaria from community health workers—and this has been sustained during the COVID-19 pandemic.

Disruption of primary health care

There were a number of primary health care services that were determined to be risky to deliver and for which specific strategies for mitigation of risk were not possible through altering the protocol. For example, during the initial risk assessment and resulting policy change, it was deemed too risky to continue malnutrition screening for children six months to five years of age using mid-upper arm circumference (MUAC) straps, as they could not be easily cleaned in between users and there were not enough individual straps to prevent possible cross-contamination. While the screening for the danger sign of pitting edema continued through the alteration of a protocol as noted, the limitation of use of the more sensitive MUAC straps increased the likelihood of missing moderate and acute malnutrition cases.

Additionally, concerns about vaccine hesitancy and safety of vaccinators acted as impetus for the cessation of facility outreach to remote communities and a transition to facility delivery while community education could be provided to counter community concerns.³⁹ There had been rumors of a new COVID-19 vaccine and anecdotal reports of children being hidden from vaccinators due to fear that the government or donors may attempt to test the vaccine on those receiving routine vaccinations. This moratorium on community-level vaccination lasted from March to May 2020 while a media campaign was deployed and health promotion strengthened to counter misinformation. Modeled estimates showed a 30% drop in administration of the third dose of pentavalent vaccine for coverage of diphtheria, tetanus, pertussis, hepatitis B, and *Haemophilus influenzae* type B as well as a 35% reduction in childhood vaccination overall and outpatient visits.³⁹ Although the policy was reversed after only two months, it would be another two months for the outreach numbers to climb to pre-COVID-19 numbers, indicating a lag in changing practice (Figure 2). This demonstrates the challenge of continual policy change in an epidemic with evolving evidence; in these situations, delays in implementation as policy shifts are inevitable, and subsequent reversal or adjustment can be confusing and difficult for implementers.

Figure 2. Rivercess—Pentavalent Vaccine Third Doses

Source: University of Oslo. District Health Information System (DHIS2). Published online 2019. <https://dhis2.org/>.

Global evidence: Roles, challenges, and opportunities for CHWs in COVID-19 response

The challenges and opportunities Liberia found in engaging CHWs in the direct COVID-19 response and in maintaining primary health care services during the COVID-19 pandemic can be compared to experiences in other countries. A rapid review found that in countries with well-established CHW programs, CHW roles change significantly during pandemics, including COVID-19. Additional activities, on top of their usual responsibilities, included community awareness, engagement, and sensitization; and contact tracing. Health system support is required to facilitate the addition of these activities, including role clarity, supplemental training, and supportive supervision to ensure preparedness and safe, quality care delivery. Challenges faced by CHW programs during pandemics include supply chain and logistics issues, as well as insufficient supervision and increased risk of contracting disease.⁴⁰

In Liberia, Bangladesh, Ethiopia, and Brazil, CHWs educate communities on COVID-19 and support their communities to develop realistic, evidence-based response plans. To support COVID-19 prevention, CHWs in all four countries help organize handwashing stations, distribute IPC supplies, and in some cases support prevention of transmission at health facilities. In Brazil, CHWs are further involved in COVID-19 education and health promotion through

identifying people in their communities who are at high risk of severe COVID-19 illness to help them implement better prevention strategies.¹⁸

CHWs play critical roles in screening, identifying suspected cases at the community level, connecting them to response teams, and supporting tracing and isolation of their contacts. In Ethiopia, CHWs conducted house-to-house screenings of more than 11 million households. In Brazil, in addition to these roles, CHWs also monitor the symptoms of suspected cases by phone.¹⁸

CHWs in all four countries are crucial in ensuring continued access to primary health care. In some countries they also deliver care through telemedicine, supporting patients to use smartphones to get care. In Brazil and in some CHW programs in the United States, they deliver prescriptions to patients in isolation.^{18,41,42} In the United States, CHWs have reported providing support, including psychosocial support, to their patients throughout the pandemic, especially while patients are isolated or having symptoms.^{41,43,44} In the Navajo Nation in the United States, CHWs help COVID-19 patients better understand their diagnoses through providing information in patients' native language and explaining important public health protocols.⁴²

Recommendations

Based on the available body of evidence in Liberia and globally, we recommend the following to health care leaders seeking to engage CHWs in the control of COVID-19 and efforts to reduce its impact on primary health care services during this pandemic and the next one²³:

1. **Build government-led coalitions and design integrated programs.** Ensure both regular primary health care provision and pandemic response are cross-cutting, with roles and responsibilities defined across different health worker cadres and community health workers integrated into national health systems and national pandemic response.
2. **Establish strong data systems that include community-based surveillance and monitoring of quality of service delivery.** Strong data systems that start at the community level can identify emerging infectious diseases early and stop outbreaks before they become pandemics. They can also reveal reductions in primary health service use and facilitate procedures like contact tracing.
3. **Prioritize strong community engagement before pandemics hit (as well as during and afterward).** As trusted members of their communities, CHWs are crucial to engaging community structures to promote healthy behaviors that prevent disease transmission, spread correct information about diseases and counteract myths, and link those who may be infected or at high risk to appropriate care.
4. **Provide frontline health workers, including CHWs, with updated training.** CHWs need fast and accurate training on emerging infectious diseases like COVID-19 that may pose a threat to their communities. Training needs to be updated as new evidence emerges; digital training tools can help to rapidly update protocols and guidelines and to maintain IPC measures such as social distancing.

5. **Protect CHWs as vital frontline health workers.** CHWs need protection to continue providing care; therefore, risk-appropriate PPE for CHWs, with equal quality standards to that of other health workers, should be included in national forecasts and budgets, and strong supply chains should be established before pandemics hit to ensure continued provision of crucial medicines and diagnostics, as well as the ability to accommodate protective equipment. Additionally, restrictions such as PPE export bans and policies that prevent international development aid to be spent on PPE must be limited to ensure continuation of the supply chain that is developed.³⁴ Tools that can estimate PPE consumption based on service delivery package and population served are needed. They should be developed, studied, validated, and shared for context-specific adjustments.
6. **Ensure continuity of CHW salaries and supportive supervision.** During a pandemic, frontline workers like CHWs take on extraordinary risk as they work to continue caring for their communities. They must be supported accordingly through continued salaries and supervision, with supplemental hazard pay and extra supervision visits if possible.
7. **Seize the window of opportunity.** Design responses to outbreaks with an eye to long-term health system strengthening. Frame health system challenges as problems that could be solved by well-designed, well-resourced CHW programs to galvanize the political will and mobilize the necessary resources to remake and strengthen the health system. Use data to more rapidly learn, adapt, choose, and implement strategies.
8. **Establish an immunization framework that prioritizes equity of access and uptake.** As the COVID-19 vaccines become available, CHWs are an important resource in countering misinformation and facilitating community acceptance of the vaccine. Additionally, similar to their role in vaccination for children under five years of age, they may play a key role in organizing community-level vaccination, tracking those who have been vaccinated to ensure adequate coverage, and in some countries, even administering vaccinations.⁴⁵ By including CHWs in the immunization plans for COVID-19, and other vaccine-preventable diseases, an opportunity arises to increase demand and, in doing so, increase equity, which is required for the actual elimination of disease.

Conclusions

The experience of Liberia and other countries facing COVID-19 has revealed that investing in people closest to the problem is the core of resilience in primary health systems. Community health workers are the closest to the patient and the challenges they face. Investing in them is vital for responding to endemic diseases as it is in times of epidemics.

Outbreaks and pandemics have an unforgiving ability to highlight health system vulnerabilities and inequities. In doing so, they point to the immediate need for emergency response but also the opportunity for building more resilient and equitable health systems. Among the key

lessons that were learned during the past Ebola outbreak, and that are being further emphasized during the COVID-19 pandemic, are (1) investing in robust health systems during normal times leads to more resilient health systems during emergencies; (2) CHWs are integral members of a resilient health system; and (3) countries should be supported in further professionalization of community health workers and developing stronger community health systems.

Analyses of health service utilization during prior outbreaks have emphasized both the underlying supply and demand factors.⁴⁶ Supply factors include the number of available health care workers, available PPE, and open health facilities. Demand factors include patient health care-seeking behavior and trust in the health system. In incorporating CHWs in outbreak response and continuation of essential health services, it is critical to provide them the training and resources needed to recognize the danger at hand and to safely continue working. This contributes to the supply side of health utilization. However, CHWs' biggest impact may be in their ability to affect the demand for health services before, during, and after an outbreak. They are uniquely positioned to provide education about the emerging disease and dispel myths and rumors, and they are familiar providers of health care in their communities.

It is important to note that public trust in the health system is cultivated during normal times, not just during outbreaks. CHWs that had been well supported and professionalized (equipped, trained, supervised, and paid) were more likely to be providing reliable, routine services before the outbreak and therefore more utilized during the outbreak. As the Ebola outbreak served as a catalyst for Liberia to further expand and formalize its National Community Health Assistant Program, the COVID-19 pandemic should further the push for CHW programs and community-based health systems that will get everyone closer to universal health coverage and more resilient global health systems.

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Solutions to Oral Health Inequities

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When the coronavirus reached the United States in early 2020, as a nation we did not anticipate the full impact that the pandemic would have on nearly every facet of our lives. Dentistry was no exception. In March and April many of the country's dental providers were under state mandates to limit provision of care.¹ As a result, access to care was severely curtailed, and dental practices and clinics were forced to close or restricted to provide only emergent or urgent dental care. Providers struggled to identify and implement best practices for providing care with increased precautions to prevent disease transmission, acquiring the required personal protective equipment (PPE) available in limited supplies, leveraging new technologies afforded by teledentistry to provide services remotely, and preparing for the financial challenges ahead.

As the months passed, health inequities were magnified as the elderly, people in congregate living facilities, people with underlying health conditions, and minority groups had not only higher rates of COVID-19, but also worse health outcomes and higher mortality rates. Health inequities among population groups have been a long-standing issue, but for many who were unaware of this simmering challenge, COVID-19 brought the matter to the forefront in a way that could not be overlooked. Such inequities are all-encompassing. Beyond health and oral health, they touch on many other factors, such as education, nutrition, and employment. Although currently there is no evidence of the development of new and specific oral health inequities causally resultant from the COVID-19 pandemic, the pandemic has exacerbated previously existing inequities, bringing them into sharper focus.

This chapter addresses solutions to oral health inequities and complements the foundational information provided throughout this broader volume, particularly the two other oral health

chapters (COVID-19 and Oral Health; Integration of Primary Care and Oral Health), by addressing three factors: (1) oral health inequities; (2) current challenges in addressing inequities; and (3) the impact of the COVID-19 pandemic on dental care delivery.

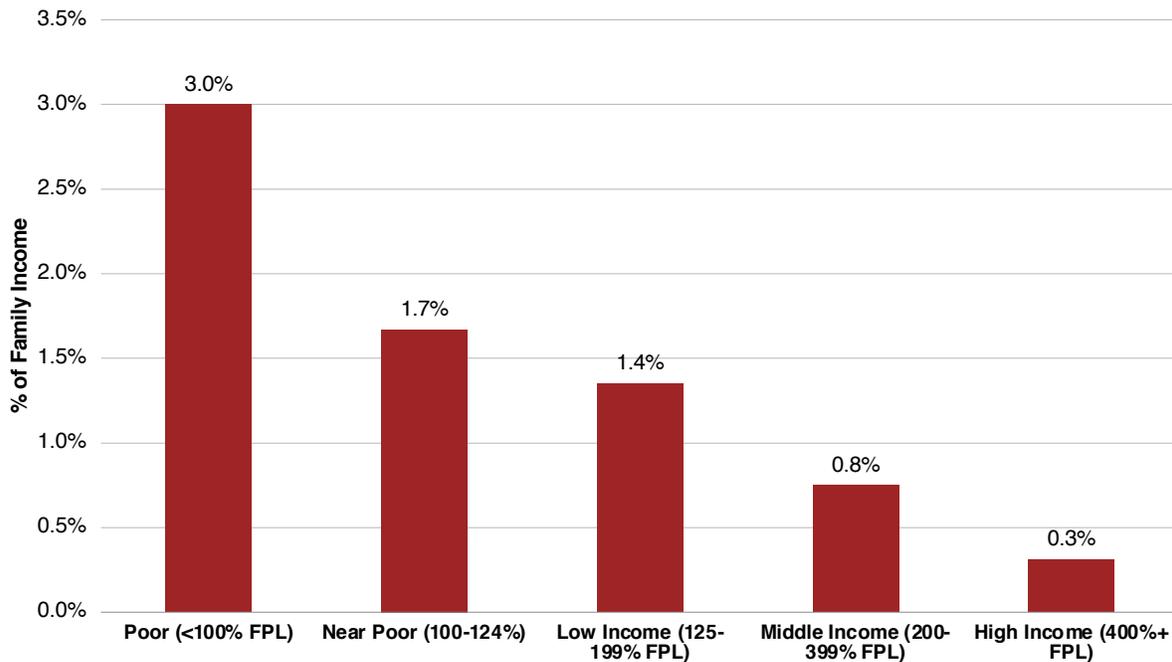
Oral health and oral health inequities

Oral health is inseparable from general health and welfare. Eating, drinking, speaking, laughing, smiling, socialization, personal appearance, self-perception, perception of others, employability, promotability, and overall quality of life are influenced by oral health. Oral health is also associated with systemic conditions such as diabetes, cardiovascular disease, obesity, dementia, respiratory health, and adverse birth outcomes.²⁻⁸

Dental caries is a bacteria-mediated disease that results in subsequent cavities in teeth. Bacteria causing the disease are transmissible. Dental caries is the most prevalent childhood disease. This disease process leads to tooth decay, or cavities in teeth, and can result in pain and suffering, tooth loss, abscess development, migration of the abscess, and related consequences affecting concentration, ability to sleep, ability to study, productivity in work, disrupted leisure time, and emotional distress. Although a rare occurrence, migration of a dental abscess has led to brain infections and death of children and adults. Left untreated, dental caries in children continues into their adolescent and adult years. Gum disease (periodontal disease) affects large numbers of adults and can also lead to pain, difficulty chewing, alteration in diet and nutrition, and eventual tooth loss. Several studies have shown associations between periodontal disease and diabetes, certain forms of heart disease, and premature births and low birthweight.²⁻⁸

The challenge of oral health inequities can be summarized by the following conundrum: the population cohort relatively least in need of dental care receives the most care; the population cohort relatively most in need of dental care receives the least. This is evidenced by the fact that 93% of individuals living in poverty have unmet dental needs, compared to 58% in high-income families; meanwhile, only 28% of individuals living in poverty utilized dental services compared to 55% of high-income families.⁹ It is the imbalance in access to care that has been exacerbated by the effects of the pandemic.

While the prevalence of tooth decay in children has declined over the past 20 years, inequities by income and racial categorization persist. Nineteen percent of children ages 2-19 living below the federal poverty level (FPL) have untreated dental caries compared to only 7% living at 300% or more of the FPL.^{10,11} People in poverty spend 10 times more as a proportion of their annual family income on dental services compared to high-income families (Figure 1).⁹ The prevalence of dental caries also varies significantly among population groups. As an example, 57% of Hispanic and 48% of Black children and youth have experienced tooth decay (treated and untreated) as a result of dental caries disease, compared to 40% of white and 45% of Asian children and youth.¹⁰ The differences in dental caries experience among these racial and income categories demonstrate oral health inequities.

Figure 1. Average Annual Proportion of Family Income Spent on Dental Services, 2011–2016⁹

Used with permission from the CareQuest Institute for Oral Health.

Some children with high levels of tooth decay, as well as children with special health care needs that make them poor candidates for dental care in a typical care setting, receive their care in a hospital operating room (OR) or ambulatory surgical center under general anesthesia. These settings and modalities of care are also necessary for the dental treatment for some adults with intellectual and developmental disabilities or medical complexities. The availability of OR time and space for dental procedures has been a long-standing challenge for hospital-based and hospital-privileged dentists, often needing to compete with medical procedures that are reimbursed at higher rates. Reimbursement rates are significantly lower for dental care provided in an OR setting despite similar overhead costs of supplies, personnel, and related factors. As a result, the provision of dental care in hospital ORs appears to be given lower priority by hospital administrations. This can delay or prevent severely affected and vulnerable children and adults from receiving the dental care they need. This represents another facet of oral health inequity exacerbated by the pandemic.

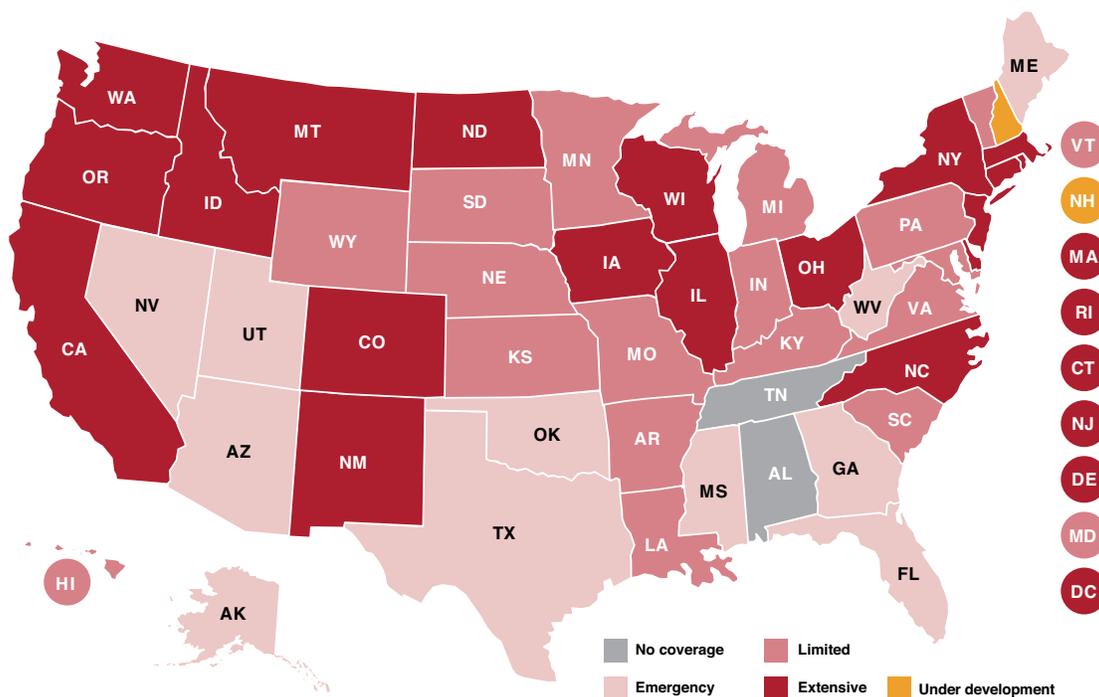
Evidence of oral health inequities among population groups continues through adulthood. Adult population cohorts, most notably those who are low income and people of color, have been severely affected by COVID-19. Black adults aged 20–64 exhibit twice the level of untreated tooth decay as their white counterparts.¹² These trends accentuate into later years of life.¹³ Edentulism, or complete tooth loss, has been declining among older adults, but to a lesser degree among racial/ethnic minorities and lower-income populations.¹⁴ The gap in dental care utilization among low- and high-income older adults has widened in recent years. High-income older adults utilize dental care services substantially more than their low-income

counterparts.¹⁵ The self-reported overall condition of the mouth and teeth is lower among low-income adults and older adults, compared to those with middle or high income.^{15,16}

Oral health inequities, untreated dental cavities, and periodontal disease are particularly prominent among older adults and other populations living in long-term care settings such as nursing homes and assisted living facilities. Oral health examination and care are under-prioritized, infrequent, and often absent in custodial settings for seniors and people with disabilities. Typically nursing, caregiver, and direct support staff in these facilities are not trained in assisting residents and patients with regular oral hygiene.¹⁷

Access to dental care is important to prevent disease and improve function and appearance. Dental insurance is one of the most important factors enabling access to dental care. More than 70 million people are insured by state Medicaid programs, but there are significant state-to-state variations in dental coverage offered by these programs for adult beneficiaries. Many states do not include dental care provisions for adults in their Medicaid program (Figure 2). Roughly 40 million children covered by Medicaid and the Children’s Health Insurance Program (CHIP) have dental coverage due to the Early and Periodic Screening, Diagnosis and Treatment (EPSDT) program benefit required in state Medicaid programs. Almost 90% of all children have dental benefits coverage through private or public insurance, compared to 66% of working-age adults and 34% of older adults.¹⁸ However, only 50% of children utilize dental care, or have at least one dental visit, in a given year, compared to 36% of working-age adults and 44% of older adults.¹⁹ Across all age groups, the cost of care presents the greatest barrier to utilization of dental care services.²⁰

Figure 2. State Medicaid Coverage of Adult Dental Benefits, January 2020²¹



Used with permission from the CareQuest Institute for Oral Health.

Medicare provides access to health care for 60 million older adults. The fastest-growing age cohort in the United States is the population 65 and older. However, there is no dental care benefit in traditional Medicare (Parts A and B). Some older adults may have dental coverage through their state Medicaid program, depending on their eligibility and whether their state Medicaid program contains a benefit for adult dental service, but many state Medicaid programs do not include dental service for adults.²² Other seniors may have dental coverage through a retirement plan; however, the proportion of seniors with that type of coverage is diminishing. As of 2020, more than half of the Medicare Advantage (Part C) supplemental plans offer dental services. Still, many older adults living on limited fixed incomes cannot utilize the supplemental plans as they require greater out-of-pocket costs. Out of every dollar spent on dental services among Medicare beneficiaries, 75 cents is paid out of pocket.²³⁻²⁵

Nationally, less than half of dentists are enrolled in their state's programs for children covered by Medicaid or CHIP, yet not all of these dentists actively provide care to these populations.²⁶ Less than a third of general and pediatric dentists bill at least \$10,000 to Medicaid annually, a threshold often used to measure meaningful participation in Medicaid programs.²⁷ There are fewer dentists willing to treat the adult population that is covered by Medicaid.^{28,29} This makes access to care a challenge for children and adults who have a dental benefit through Medicaid.

The Patient Protection and Affordable Care Act requires the availability of dental and vision care in marketplace health insurance plans as essential health benefits specifically for the pediatric population, but it does not include a provision for dental services for adults.³⁰ The 38 states that expanded their Medicaid programs following the passage of the Affordable Care Act also expanded access to dental care for lower-income children by its inclusion in the EPSDT program. However, some states with an adult dental benefit in Medicaid did not expand those benefits, as a cost-saving measure.³¹

Lack of a comprehensive adult dental benefit in Medicaid programs in states has resulted in shifting costs to hospital settings. Tooth decay, its potential subsequent infections, and abscess development are not self-healing. People in pain will, and must, seek care wherever some relief can be found. Consequently, many people turn to hospital emergency departments to address unmet dental needs. Visits to emergency rooms for dental pain can cost anywhere from \$400 to \$1,500, compared to a \$90 to \$200 dental office visit.³² Oral health-related conditions result in more than two million visits to hospital emergency departments annually, accounting for a \$2.7 billion expense.³³ This approach to addressing dental pain and infection is costly for hospitals in time and resources, and it does not address and resolve the present dental problem. At best, most emergency departments provide prescriptions to address infection and pain only. People may or may not be able to, or have the resources to, have the prescriptions filled. Nevertheless, their underlying oral health problem has not been addressed and would certainly reemerge.

The distribution of dentists also contributes to the challenge of accessing care. Populations in rural areas and people living in low-income and inner-city locations are particularly troubled in this regard. There are 6,500 dental health professional shortage areas across the nation designated by the US Health Resources and Services Administration (HRSA). An estimated

11,000 additional dental practitioners would be required to meet the needs of the 60 million people living in these areas without adequate access to dental care.^{34,35}

What is commonly referred to as “the dental care safety net” comprises Federally Qualified Health Centers (FQHCs), other volunteer and nonprofit clinics, academic dental institutions, school-based oral health programs, and dentists who are active providers in their state’s Medicaid and CHIP programs. This “safety net” has some capacity to provide dental care to those who are uninsured, poor, or low income and who experience barriers accessing traditional private dental care practice settings. There are nearly 13,000 FQHC sites across the country. Thirty million people in the United States receive their health care services at these sites, including a third of all those living in poverty and one in five who are uninsured.³⁶ Nationwide, approximately three-quarters of FQHCs offer dental care services, rendering dental care to just under five million people annually.³⁷

Provider and patient concordance has been shown to be an issue for many in accessing medical care.^{38,39} The number of Black and Latino dentists lags far behind the percentage of these respective population groups in the United States. While Black people represented 12% and Latinos 18% of the US population in 2016, only 4% of dentists were Black and 5% Latino.^{40,41} Dental school enrollment and graduation of Black and Latino students have shown little increase over the recent years.⁴²

Current challenges in addressing inequities

Several factors contribute to the persistence of preventable dental disease in the US population. The reasons are complex, and multifactorial.

First, we have a limited focus on preventive dentistry. Existing payment systems reward dental providers for the treatment of dental disease rather than encouraging its prevention. Reimbursement structures incentivize provision of costly services rather than focusing on disease prevention, oral health promotion, minimally invasive procedures, and options for more cost-effective dental care. As such, dentists spend more time and resources providing surgical interventions rather than offering care that prevents the onset of disease, such as prophylactic cleanings delivered on evidence- and risk-based intervals, fluoride varnish application, and addressing oral health and nutritional behaviors. More recently, many Medicaid programs, some private insurers, and the American Dental Association (ADA) have begun to recognize the value of less invasive services like the use of silver diamine fluoride and glass ionomers, which have therapeutic benefits for existing tooth decay. Yet there remain inconsistencies in levels of coverage and payment for these types of services among state Medicaid programs, private insurance plans, and institutional policies.⁴³

Second, we face challenges to population oral health. Population health refers to the approach taken by public health leaders and other community partners offering services and support to achieve positive health and well-being outcomes in the population. The public health approach views the population as the “patient” and focuses on what is the best intervention to prevent disease and protect and promote health for that population. The population

can be defined as demographic segments of the population or an entire local community, as well as cities, states, and the nation. Community water fluoridation and community-based sealant programs are examples of public health interventions. The dental care safety net is also a component of population health. Without the dental care safety net, millions of people would not be able to access dental care. The concept of population oral health, and its practical applications, is often a weak element in dental school curricula. In part, this may result in dentists who do not view population health as a practical approach or financially viable model for their practice. The patient population traditionally seen in private practice settings is not the same population seen in the safety-net settings. Population health services reach people not being served in private practice settings.

Third, we need education on the social determinants of health. Dental schools dedicate considerable time to teaching biomedical sciences and fine motor skills, but often dedicate less attention to educating students on social determinants of health (SDOH).⁴⁴ The economic, educational, and environmental factors of individuals' lives have a greater impact on individuals' health status than does the receipt of health care services.⁴⁵ There does not yet exist an educational standard that calls upon dental programs to incorporate SDOH into their curricula.⁴⁶ The importance of SDOH for health and oral health outcomes, and the practical applications of addressing SDOH in dental care, seems to be underutilized and warrants both study and application in practice settings.

Fourth, we need to address the positioning of dental providers in the broader health care landscape. Some health care providers, as well as the public, may perceive dentists as having a focus limited to addressing problems of the teeth, rather than being engaged members of interdisciplinary health care teams focused on optimizing oral health as a component of overall health. Few dentists treat caries and periodontal (gum) disease as chronic diseases, reaffirming this perception. Typically dentists treat caries with dental restorations that replace damaged tooth structure. However, dental restorations alone do not eliminate the bacterial etiology and causes of the caries disease process. A more comprehensive approach to dental disease management that includes continuous monitoring of disease status, its impact on systemic health, and treatment modalities that are pharmacologic or nonsurgical could reposition dentists in the minds of health care colleagues and the public.

Finally, we must address financial demands. Dental students commonly graduate with significant student debt. In 2019, the average dental school graduate had \$292,000 in student loan debt.⁴⁷ Early career dentists face significant accumulated loan obligations, and those that pursue purchasing or establishing a new dental practice face even greater financial debt. The requirements needed to maintain a practice are also expensive, given the high costs of dental equipment and supplies. These financial demands, combined with a fee-for-service reimbursement structure, leave early career dentists with very few options or latitude to practice in a manner beyond that prescribed by the traditional payment models.

The impact of the COVID-19 pandemic on dental care delivery

People most in need have experienced a shortfall in the availability of dental care, and the challenges they routinely face accessing care have been exacerbated during the COVID-19

pandemic. The inability to access care has, in turn, exacerbated inequities in oral health conditions affecting numerous population groups. Most notable among these population cohorts and communities are children, low-income people, rural and marginalized urban communities, elderly adults, Alaska Natives, American Indians, immigrants, and those in long-term-care residential settings. Cross-hatched among these cohorts are populations identified by racial category and ethnicity. About one-third of the US population is represented among these groups.

The initial effects of COVID-19 disproportionately affected large urban settings in the spring of 2020, then spiked in rural areas in late summer and early fall 2020. The end of 2020 brought a surge that spared essentially no location nationwide. In rural settings, medical infrastructure was overwhelmed by the effects of COVID-19 in terms of people affected, available health workforce, health service capacity, and related supplies.⁴⁸ It is expected that health inequities, including those related to oral health, will become more extreme as a result of COVID-19.^{49,50} During the early stages of the COVID-19 pandemic, in April and May 2020, dental care safety-net settings were forced to close or were restricted to providing only emergent or urgent dental care.¹ After state and local restrictions were lifted, the demand for dental care resumed in those facilities. However, new challenges emerged and will continue to evolve as providers and systems determine how best to provide dental care safely in a “new normal” context. This section explores those challenges.

- *Redeployment of the workforce.* Many dental professionals working in safety-net settings were redeployed during the public health emergency, temporarily unable to address the dental needs of the communities they serve. Resources were understandably prioritized for COVID-19-related activities such as testing, contact tracing, and planning and implementing revised safety and operational protocols.
- *Staffing.* In late May 2020, 31% of dental care providers in FQHCs reported that they had laid off or furloughed most or all of their staff. By late August 2020 only 9% reported that most or all of their staff continued to be laid off or furloughed, although 44% had at least some staff still furloughed or laid off.⁵¹
- *Personal protective equipment.* During earlier phases of the pandemic, in the spring of 2020, dental practices and safety-net dental clinics experienced shortages not just of PPE⁵² but also other dental supplies, such as syringes needed to provide local anesthetics. Many providers lacked confidence that they could get the PPE needed to keep staff and patients safe.⁵³ As PPE supplies became more available for purchase by dental settings in summer 2020, a new challenge emerged due to the drastically increased prices of many types of PPE (e.g., gloves, gowns, N95 respirators, and surgical masks). By December 2020, nearly a third of dentists nationally indicated that the cost of PPE had at least tripled compared to before the pandemic.⁵⁴ In some cases, dental providers responded by increasing fees for services or introducing a PPE surcharge. Shifting these costs to patients may have exacerbated the cost barrier to dental care, especially for lower-income and underserved populations.

- *Service disruption.* A September 2020 survey of dental providers from a 20-state dental insurance network found that 94% of dental offices in that network were open for most services, including routine care; 4% were open only for urgent or emergency oral health needs; and 2% were closed and not seeing any patients through in-person or telehealth modes.⁵³ More than half of dental providers reported an increase in patients who no longer had commercial dental insurance due to loss of their employment as a result of the COVID-19 pandemic.⁵³
- *School-based oral health.* Many children in underserved populations have access to dental care services through school-based oral health (SBOH) programs. SBOH programs have been a major access point for dental services for children, especially those in low-income families or who are traditionally underserved. However, SBOH programs have been severely curtailed due to the pandemic.⁵⁵ Among children continuously enrolled in Medicaid who received school-based dental services in 2017, 66% had never received dental care, 36% of whom went on to receive care in an office setting.⁵⁵ This access was halted in the spring of 2020 when a large segment of the nation's schools quickly pivoted to remote learning environments due to the pandemic.⁵⁵ As a specific example, in the northwest region of Washington State, the school-based sealant programs were suspended, impacting 45,500 children.⁵⁶
- *Medicaid provider disenrollment.* There has been a reduction in the number of Medicaid dental providers in private practice. The pandemic led to 8% of Medicaid providers in private practices disenrolling from their state's program from March to December 2020.⁵⁴ An additional 15% of Medicaid dental providers reported considering disenrolling, and 20% reduced the number of patients covered by Medicaid in their practice.⁵⁴
- *Disproportionate impact on providers of color.* The COVID-19 pandemic-related changes have disproportionately affected dental providers of color in terms of patient and payment volumes and capacity.⁵⁷ Survey data from a national network of dentists found that 71% of dentists of color reported significant reductions in patient volumes since the COVID-19 pandemic began, compared to 57% of white providers. Dentists of color were more likely than white providers to report a reduction in the maximum number of patients seen per day due to the pandemic-related changes in patient treatment protocols, at 85% compared to 70%, respectively. Fifty-three percent of oral health providers of color reported seeing fewer new patients than before COVID-19, compared to 40% of white providers. Dentists of color treat more patients of color than white dentists. People of color experience more oral health inequities than the general population. The lower volume of people of color seeking dental care suggests that preexisting oral health inequities among that population would become exacerbated.
- *Patient return to care.* Nationally, patients' return to dental care safety-net settings has lagged compared to patients' return to private practices. Patient volume in private practices initially rebounded in September 2020 to an estimated 80% of pre-COVID-19 levels, but it was less than 60% in public health settings.^{52,58} In the late 2020 COVID-19

surge, less than a third of private practices reported being “open and business as usual,” and only one in five dentists practicing in public health settings reported the same.⁵⁸

- *Funding.* In addition to multiple impacts on patient care, COVID-19 has affected care delivery and funding for FQHCs.⁵⁹ Widespread staff furloughs occurred due to a collective \$34 billion reduction in revenue—a consequence of limited patient visits during the pandemic.⁵⁹ Yet FQHCs were able to leverage opportunities to establish systems that can translate into a value-based system of care, create flexibility in workforce modeling, and leverage telehealth to sustain capacity for underserved populations.⁵⁹
- *Providers’ longer-term expectations.* Between 60% and 70% of providers in public health settings, compared to less than half of providers in other practice settings, anticipate long-term changes in the work process of front desk and clinical staff, including changes in infection control, the number of patients seen in a typical day, ongoing attention to occupational hazards, and increased use of minimally invasive and limited aerosol-generating procedures.⁵¹

Dental practice changes as a result of the COVID-19 pandemic have generated concerns among dental providers about how dental care delivery will be impacted long term. The 20-state survey of dentists also found that 47% anticipated decreased patient volumes.⁵³ Nearly one-third anticipated increased use of less-invasive dental procedures. Additionally, approximately half of dental providers reported that they expected increased infection control procedures to remain in effect to reduce contact, droplet, and airborne transmission of viral particles, while 44% anticipated increased concerns among their dental teams about occupational hazards, such as virus exposure.⁵³ The sustained cumulative effect of lower patient volumes, less invasive (and less-revenue-generating) dentistry, increasing demands of time and resources for proper infection control, and staffing concerns could significantly reduce dental practice revenues. Lower revenues for dental practices could result in higher treatment costs for consumers, further limiting treatment opportunities for individuals for whom the cost of care is already a barrier.

Solutions through delivery system innovation

In this section, we offer solutions that will address inequities in dental care during the pandemic period and beyond. These solutions include sustained enhanced use of teledentistry, minimally invasive dentistry, interprofessional collaborative practice, workforce expansion, value-based care, and enhanced public insurance programs.

Teledentistry

Due to state mandates suspending or limiting dental practices at the onset of the COVID-19 pandemic, there was a sudden high demand for teledentistry visits. Teledentistry is the use of technology that allows dental providers to educate, assess, and make treatment

recommendations via Internet-based software programs.⁶⁰ Some dental practices were able to make the transition to teledentistry platforms more easily than others. This was in large part due to the amended telehealth regulations issued by the Office of Civil Rights, Department of Health and Human Services, which softened restrictions on Internet-based platforms that dentists were allowed to use for communication and transfer of protected health information.⁶¹ Additionally, in May of 2020, as an immediate response to dental office closures, the ADA released *COVID-19 Coding and Billing Interim Guidance: Virtual Visits*, which outlines insurance reimbursement and recommended communication strategies for teledentistry visits.⁶² Resources also became available to help states create regulatory environments more conducive to teledentistry.^{63,64}

Telehealth platforms were being used to expand access to dental care prior to the COVID-19 pandemic. However, there was no widespread usage among dentists. In 2015, the ADA issued a policy statement as guidance for state policy development, which was updated in 2020.⁶⁵ The document covered issues for dentists to consider regarding patients' rights and protections, supervision of allied personnel, licensure requirements, and expectation for insurance reimbursement. Still, dentistry has been slow to adopt the usage of teledentistry platforms to address oral health. Several states have yet to adopt teledentistry policies or promote its usage.^{66,67}

The slow adoption of teledentistry is the result of concerns about state licensure policies, scope of dental practice, insurance reimbursement, patient protection, training of allied dental personnel, technology gaps among underserved populations, and patient acceptance.⁶³ Solutions to address health inequities through teledentistry will require attention to each of those concerns. Even so, in July of 2020, the percentage of private practice dentists using teledentistry was 12.2%. In public health settings, the percentage of dentists using teledentistry during that same time period was 57%, which appears to be a consistent trend.⁶⁸ A recent study found that 86% of patients were satisfied with their overall teledentistry experience, and nearly one-third (31%) reported they did not need in-office care following their teledentistry visit.⁶⁹ However, most patients receiving teledentistry visits were receiving triage for emergencies and/or advanced-stage dental diseases that would eventually require in-office care at some point. A survey of providers that work in public health settings indicated that adopters of teledentistry are twice as likely as other providers to anticipate increased use of noncontact dental services as a long-term change.⁷⁰

Dental providers should develop teledentistry systems that improve access to care while maximizing in-office treatment efficiency. Dentistry should advocate for permanent legislation that would expand the use of teledentistry. Additionally, states that currently do not allow teledentistry should adopt clear guidance for teledentistry usage within dental practice acts. Furthermore, not all private insurers and state Medicaid programs currently reimburse for teledentistry visits. Providing insurance coverage for teledentistry visits would incentivize its usage among dentists.^{66,67,71,72}

Professional organizations, dental education programs, and continuing education programs need to offer training courses to develop efficient teledentistry systems. This should include education on state policies, the scope of practice of teledentistry visits, and licensure

jurisdictions. For example, a state may not permit dentists to legally provide teledentistry visits to individuals who reside in another state. Additionally, states should provide guidelines regarding the supervision of dental team members when conducting teledentistry consultations. Dental practice systems for teledentistry should also ensure adequate protection of patients' health information, as well as record keeping of teledentistry visits, patient referrals, and follow-up visits. Furthermore, all dental personnel should have a clear understanding of the various uses of teledentistry for patient consultations and problem-focused evaluations. Many dental services may be provided via teledentistry, including case management for patients requiring specialty and/or emergency care, oral hygiene instructions, patient education, outreach programs to underserved or remote areas, and motivational interviewing.

Finally, patients should be aware of teledentistry and its functionality. Dental providers need to be aware of any concerns and limitations that patients may have for using teledentistry and develop strategies to address them. Patients and providers who have adequate capacity and knowledge of how to use teledentistry to address oral health concerns will be in a better position to reduce inequities in oral disease experience and access to care. Thus, it should be a priority to ensure that underserved and low-income populations are equipped to receive the benefits of teledentistry visits.

Minimally invasive dentistry

Minimally invasive dentistry (MID) is an evidence-based approach to dental care that embraces pharmacologic treatment of the dental caries disease process as a means to limit or stop the progression of tooth decay. The premise behind MID is that tooth decay can be treated with minimal to no surgical intervention, contrary to traditional treatment approaches requiring “drilling and filling.” This can reduce the progression of tooth decay, along with treatment times, treatment costs, and patient anxiety, which have been reported as significant barriers to dental care.⁷³

A transition toward MID requires that dentists learn how to use the MID model of dental care and embrace it as an evidence-based, efficient, and cost-saving treatment in their practices. This can be accomplished through predoctoral and postdoctoral dental education and training programs and through continuing education for dentists in practice.

Dental insurers should also reimburse dentists for MID procedures at rates that are comparable to traditional restorative procedures given that they have similar, if not better, outcomes. Minimally invasive dental procedures are typically reimbursed at lower rates than surgical interventions, if coverage even exists. For example, silverdiamine fluoride (SDF) is a topical medication that can treat some tooth decay conditions due to dental caries disease, reducing the need for “drill and fill” treatment of tooth decay. This is an efficient, therapeutic, and low-cost service.^{74,75} If MID is to become a preferred choice of treatment that providers offer, reimbursement incentives could help propel that change.

Interprofessional collaborative practice

Dental care systems are often not included in interprofessional collaborative care teams. Most dental practice occurs in private offices solely focused on dental care. There are opportunities for dentists to practice collaboratively in safety-net primary care clinics, many of which are FQHCs, among other opportunities.

Dental providers can assist in primary care efforts in a number of ways, particularly during periods of restriction on dental practice, such as those experienced with the COVID-19 pandemic. In some settings, dentists have performed COVID-19 testing and assisted in contact-tracing efforts.⁷⁶ With more effective medical-dental integration and integrated health records, there is potential for dental professionals to assist medical colleagues in the identification of patients with chronic conditions such as diabetes and high blood pressure, those who smoke, and other high-risk individuals. By identifying these individuals, dental providers can not only assess patients' oral health needs, provide minimally invasive dental care, and develop treatment protocols so that existing oral health problems do not worsen, but can also refer these patients for follow-up care with medical colleagues.

Similarly, other health care professionals can help identify oral diseases and work collaboratively with dental providers to develop interventions aimed to reduce oral health complications. Individuals requiring extended isolation periods or experiencing prolonged effects of COVID-19 complications may require additional support managing their oral health due to their inability to visit a dental office.^{2-8,77}

Dental providers can also help manage chronic diseases of COVID-19 patients who are at higher risk of morbidity and mortality. Individuals with preexisting health conditions such as diabetes, heart disease, elevated blood pressure, or cancer; older adults; and individuals from racial minority groups have a higher risk of death from COVID-19. Those individuals may also be at higher risk for oral diseases due to biologic or social determinants of health. Thus, dental providers' attempts to address chronic disease effects, through interventions such as oral health education, nutritional education, or smoking cessation, could have significant benefits in helping patients reduce their risk and the severity of COVID-19 complications.

Workforce expansion and distribution

The dental care workforce is commonly made up of dentists, dental hygienists, dental assistants, dental therapists, community dental health coordinators (CDHCs), community health workers, and others. Each member of the dental team has a defined role and contribution to patient care and oral disease prevention. Currently the dental profession—including private and safety-net settings—services only 55% of the population, including those with commercial insurance, Medicaid, or self-pay. There are several strategies that federal and state governments can adopt to address workforce shortages and ensure that the remaining 45% of the population can access dental care. For example, more student loan repayment programs and increased Medicaid reimbursement may incentivize dental providers to accept Medicaid enrollees or seek practice opportunities in underserved areas. States can also expand direct access for dental hygienists to deliver dental care in remote and underserved areas without

requiring the supervision of a licensed dentist. Currently, eight states do not allow direct access for dental hygienists.^{78,79} In addition, states that allow direct access can reduce restrictions on dental hygienists' ability to take advantage of those policies, such as extensive continuing education and/or work requirements.^{80,81}

Another workforce strategy aimed at improving access to care is the use of dental therapists, who can assist in the anticipated shortfall of licensed dentists to treat new and existing Medicaid enrollees, as well as individuals living in tribal communities or other underserved areas.⁸² Dental therapists are educated and trained to provide a limited range of clinical services that are also provided by a dentist. As of January 2021, legislation in 12 states permits dental therapists to practice in collaboration with a supervising dentist. More states have active legislative proposals to initiate dental therapy practice. Additionally, CDHCs can educate patients, improve oral health literacy, and ensure their awareness and capacity to seek appropriate dental care.⁸³ CDHCs are somewhat similar in function to community health workers. To include and increase the number of dental therapists and CDHCs in dental care settings, more awareness among dental providers, educational opportunities, and funding opportunities to support their employment in dental settings are needed.⁸⁴⁻⁸⁶

Value-based care

Value-based care is a payment system in which providers' reimbursement levels are driven by health outcomes, and service delivery is focused on prevention and health promotion.⁵⁹ These systems differ from traditional fee-for-service models that reimburse providers based on volume of procedures, most of which are surgical interventions. Value-based reimbursement systems typically include bundled incentive payments to encourage provision of preventive services and improving oral health outcomes for individuals and the patient population within a practice.

Some health care systems structured on value-based payments during the early days of COVID-19 restrictions had fewer financial setbacks compared to health care organizations with fee-for-service payment systems, allowing the value-based health care systems to remain open and avoid provider furloughs. Those organizations also had more flexible financial capacity that enabled them to focus more effectively on COVID-19 testing, contact tracing, telehealth, home-based care, and patients' social needs.⁸⁷

Bringing more dental providers into value-based payment systems may offer an opportunity to minimize the impact of dental care disruptions that ultimately put dental providers in situations where they lose productivity and revenue necessary to maintain their dental practices.⁵⁹

Public insurance programs

Restructuring public insurance programs could have a profound impact on reducing oral health inequities that have been exacerbated due to COVID-19. There is no Medicare coverage for routine dental care for seniors.⁸⁸ Only 19 state Medicaid programs offer extensive adult dental benefits.²² As of July 2020, 35 states opted to expand Medicaid under the Affordable Care Act. At that time, it was estimated that Medicaid expansion in the 15 remaining states

would increase the number of insured adults by four million. By November 2020, three additional states had expanded their Medicaid programs, further increasing the number of insured individuals.³¹ Many of those newly insured would be from underserved populations that experience high rates of oral diseases due to their challenges accessing dental care.^{89,90} The number of Medicaid-eligible and -insured individuals could substantially increase as a result of the economic impacts of COVID-19. The Centers for Medicare and Medicaid Services (CMS) indicates that Medicaid and CHIP enrollment increased nationally by nearly 8% from September 2019 through August 2020.⁹¹

Adults with poor oral health may also have additional difficulty finding employment, as most people—including employers—make instant judgments based on appearance, including someone’s smile and teeth.⁹² Increasing adult dental benefit coverage in Medicaid may reduce unemployment among those adults, promote productivity, and boost the economy. It has been estimated that employment gains from expanding adult Medicaid benefits could reduce the number of individuals receiving unemployment benefits for an aggregate savings of \$7.9 million. Additionally, tax revenue generated from newly employed individuals was estimated at \$14.2 million.^{92,93}

In addition to already limited state Medicaid funding for adult dental care, there is a possibility that some states could eliminate all funding for these services. During previous times of economic downturn, states have reduced Medicaid funding for adult dental care. This was evident during the recession in the United States nearly 10 years ago. This prospect has already been noted in response to COVID-19. Washington State is currently exploring eliminating adult dental benefits. Other states have reported budget constraints, leading to stalled efforts to expand adult dental coverage. Tennessee has reversed previous plans to extend Medicaid dental coverage for pregnant and postpartum women.⁹⁴

On a more positive note, some states have taken action to offset the possibility of worsened oral health inequities among adult Medicaid enrollees. Efforts have been successful to preserve these benefits in California and Nevada,⁹⁴ and Kansas and Louisiana have committed to moving forward with previous decisions to provide more funding for adult dental care in their Medicaid programs.^{95,96} The preservation of Medicaid dental benefits for adults among those states may have been boosted by federal relief programs that were implemented in response to COVID-19. For example, the Families First Coronavirus Response Act (FFCRA; “Families First”) increased the federal Medicaid assistance percentage by 6.2% for qualifying states, increasing the amount of money that the federal government provided for states’ Medicaid expenditures. The FFCRA also included a “maintenance of effort” requirement that prevented state Medicaid agencies from enacting more restrictive eligibility criteria during the COVID-19 public health emergency.^{97,98} However, in November 2020, CMS issued an Interim Final Rule that reversed prior interpretation of the Families First Act and associated guidance for states, allowing states to change eligibility of its beneficiaries and to cut optional benefits such as adult dental benefits.⁹⁹ The preservation and expansion of dental benefits in the midst of COVID-19 has merit, but efforts to sustain benefits must continue. Due to the negative financial impact on state budgets from the pandemic, it is possible that legislatures will attempt to reintroduce dental Medicaid budget cuts in future legislative sessions.

The COVID-19-related legislation that became law over the course of 2020 included the FFCRA, signed on March 18, 2020; the Coronavirus Aid, Relief, and Economic Security (CARES) Act, signed on March 27, 2020; and the Economic Aid to Hard-Hit Small Businesses, Nonprofits, and Venues Act (as a part of the Consolidated Appropriations Act), signed on December 27, 2020. These packages authorized various economic relief options for health centers, hospitals, and communities. There were also relief programs that enabled dentists to apply for financial support to sustain operations and continue serving their communities. These relief programs included the Department of Health and Human Services Provider Relief Fund and the Small Business Administration Paycheck Protection Program and Economic Injury Disaster Loan program. At the time of this writing, it is anticipated that there will be more COVID-19 relief packages passed in the new administration. The impact of these relief programs to sustain the dental care delivery system during a time of extreme vulnerability and to prevent further exacerbation of the lack of access to dental care experienced by much of the population is yet to be assessed.

Conclusion

The COVID-19 pandemic has yet to be contained and its impacts continue to evolve. As new information emerges, the dental care delivery system will need to adapt. The COVID-19 pandemic has brought to light long-standing inequities that put populations at risk for adverse health outcomes, including those affecting oral health. It is expected that conditions resulting from the COVID-19 pandemic will present further barriers in access to care due to financial and health care systems' limitations. Many of these barriers can be anticipated and addressed through the strategies proposed in this chapter. These system changes would help ameliorate oral health inequities that have become more apparent as a consequence of the pandemic. These changes would also position dental professionals to effectively address oral health inequities pertaining to the COVID-19 pandemic and beyond, and improve the health of all. Collectively we now have an opportunity to redesign the dental care delivery system to correct its frailties and the resultant oral health inequities.

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SECTION 3: STRATEGIES TO ADVANCE PRIMARY CARE EQUITY

Anti-Racist Primary Care Policy in the United States

Michelle Morse, Sanjay Basu, and Bram Wispelwey

Simultaneous with the COVID-19 pandemic in the United States was a national uprising against police violence, sparked by the killings of Black Americans in several cities. As protests grew in scope and attention in parallel to the pandemic, and as COVID-19 disproportionately impacted Black, indigenous, and people of color (BIPOC) communities, the medical establishment in the United States debated how to address racism within health care institutions. In this chapter, we describe the origins of racial health inequities in the United States, their relationship to health care and public health access and infrastructure, and the important role of primary care in advancing anti-racist policies for the future.

The origins of racial health inequities: Settler colonialism, racial capitalism, and their living legacy in primary care

It is impossible to understand the inequitable distribution of primary care resources in the United States without an honest accounting of the country's historical origins as a nation-state. The United States is a settler colonial nation, meaning that its historical genesis is characterized less by exogenous domination and exploitation of native peoples (colonialism) than by their elimination and supersession by European aliens (settler colonialism).^{1,2} Along with the displacement of indigenous communities, settler colonists by definition establish a paradigm of unequal relations in which they claim superiority, which distinguishes the settler colonialism process from migration, as migrants move to a new territory without superiority claims or attempts at social dominance. The social establishment of unequal relations is where settler colonialism intersects with, and claims justification by, European or white supremacy. The United States is thus an archetypal, living example of settler colonialism, which is an enduring "structure not an event."³

The United States is the wealthiest country in the history of the world in terms of gross domestic product, but its present aggregate economic condition hinges on the fact that it expropriated land from American Indians—whom the settler colonists killed off via murder, war, starvation, slavery, and disease, from a population of 50 million to 100 million in 1492 to 3.5 million by the mid-1600s⁴—and it exploited the labor of people who were kidnapped from West Africa, enslaved, and brutalized. From 1619 to 1865, the value of stolen labor amounts to \$97 trillion at minimum wage rates with modest interest, or more money than the 2020 GDP of all countries in the world, combined.⁴ The racial capitalism that informed the economic and social development of the United States continues to shape the distribution of wealth, racial categorization and hierarchy, political power, and health access and outcomes today.⁵ That this settler colonial framing of US history is little discussed,⁶ both in general and in health policy circles specifically, speaks directly to the need for epistemic reconstitution⁷ that centers knowledge, narratives, and reparative claims from BIPOC communities and remarginalizes continental whiteness.

Because ability to pay determines one's access to health care in the United States, these historical factors remain highly relevant to ongoing health care access inequities. Racial inequities in rates of insurance and insurance type are driven in large part by employment status,⁸ where institutional racism has long disadvantaged BIPOC.⁹ By creating and perpetuating an insurance system that presents financial barriers to preventive and primary care, the United States de facto rations care for the very people who have been historically wronged by legacies of racial capitalism and settler colonialism.

Additionally, these very same legacies have led to an inequitable distribution of health risks, as is increasingly legible in the discourse on essential workers during the COVID-19 pandemic.^{10,11} Not only do BIPOC suffer higher prevalence of noncommunicable diseases due to structural racism and settler colonialism,¹² but they are also at higher risk for contracting infectious pathogens, like the coronavirus that causes COVID-19, because of their overrepresentation in “the top nine essential occupations,”¹³ including transportation and material moving, health care support, food preparation and serving, building and grounds cleaning and maintenance, and personal care and service. The historical and ongoing realities of structural racism and settler colonialism generate a need for preferential access to primary care and health care overall for BIPOC. Instead, health care access is significantly and often dramatically worse for BIPOC than for white Americans.

Segregation, geography, and lack of access to care

Segregation and resultant inequities in primary care access are a product of structural racism that goes beyond the 250 years of slavery and 100 years of Jim Crow policies in the United States. US policies implemented at the federal, state, and local levels throughout the 20th century, and in violation of Amendments 5, 13, and 14 of the US Constitution, have been among the key drivers of housing inequities and racial segregation in the country. Redlining (the systematic denial of federal housing loans to those living in predominantly Black neighborhoods), blockbusting (the persuading of white homeowners to sell cheaply by playing on fears of racial neighborhood change), and contract buying (predatory deedless “ownership”

contracts with high eviction risk) were all utilized or tolerated by the government to inhibit home buying and equity for Black Americans, further entrenching wealth inequality—an inequality of such extreme degree in the early 21st century that official economic segregation policies are no longer required to maintain de facto segregation.¹⁴

The urban, predominantly coastal metropolises of American settler colonial society retain a high density of health services and professionals, while more sparsely populated rural areas suffer shortages.¹⁵ Racial segregation in rural areas, which is rampant, is associated with worse health care access.¹⁶ Similarly, within urban areas, there are stark differences in access by race. For example, the odds of being in a low-access primary care zone in Philadelphia are 28 times higher for those in heavily Black areas of the city than for those not living in these areas.¹⁷ Despite the evidence that increasing access to primary care improves high-value care and outcomes,¹⁸ including reduced mortality, the United States has a disproportionately high number of specialists relative to primary care providers, and the density of primary care physicians is continuing to decrease.¹⁹ This inequitable burden is disproportionately borne by BIPOC, who already have higher financial, insurance, and geospatial barriers to primary care, as described earlier.

While the Patient Protection and Affordable Care Act (ACA) of 2010 expanded access to insurance and primary care for tens of millions of Americans, it has failed to address the shortage of primary care providers. Significant barriers to obtaining adequate primary care access remain for patients with Medicaid coverage and those accessing care in safety-net institutions, in particular.²⁰

Commodification of the sick care system

Moving further upstream to public health, the trajectory is similarly grim. While public health spending has always represented an inappropriately small share of health expenditure in the United States,²¹ per capita inflation-adjusted public health spending has decreased by 9.3% since 2008, and continues to make up a shrinking percentage of national health expenditure from a peak of 3.18% in 2002 to a projected 2.40% in 2023.²²

The de-prioritization of public health expenditure and primary care investment derives from the misalignment of incentives in the health system. Population-level interventions are responsible for much of the 20th-century gains in life expectancy in wealthy countries, and primary care expansions led to improved outcomes. Yet there are a number of stakeholders who benefit financially from a sicker population, including hospitals and the pharmaceutical industry, who are paid more when they care for sicker patients and receive payments that correspond to higher utilization of higher complexity (more serious illness) through dominant fee-for-service payment mechanisms. Furthermore, the insurance industry is incentivized to increase the cost of health care over time, as insurance companies receive payments as a portion of total costs.²³ The modern medical industrial complex has been “characterized by interlocking relationships between business and government” and the “blurring of the line between for-profit and not-for-profit status,”²⁴ a scenario that ironically allows “nonprofit” hospitals and academic medical centers to be profit significantly²⁵ and at the expense of their

BIPOC patients.²⁶ Given the historically racialized capture of financial means that has led to a massive racial wealth gap, this multimodal capitalist health care system inevitably exacerbates racial inequities in care and access as those individuals with more favored insurance status (such as commercial employer-sponsored insurance) receive the greatest health care access and services, while those at greater risk for unemployment and poverty (receiving Medicaid or no insurance) have disproportionately fewer providers, longer wait times for service, and poorer quality care.²⁷

History of community health centers and community health workers

Despite the tremendous historical and ongoing barriers to adequate primary care for BIPOC in the United States, there remains a rich history of reforms, resistance, and alternative methods of community care. One example, spearheaded by H. Jack Geiger and John Hatch, is the creation of the community health center. The goal of Geiger and Hatch's Tufts-Delta Health Center in Mississippi was to secure "active involvement with its target populations in ways that will change their knowledge, attitudes, and motivation—address the social, economic, environmental, and political circumstances that determine their ill health."²⁸ The success of the community health center model in serving impoverished communities can be summed up in its replication, with more than 1,300 community health centers created, to date, in both urban and rural areas.

In response to racial inequities in care and access, the Black Panther Party extended its advocacy and pragmatic work to health care in the late 1960s and early 1970s. Efforts "included providing basic medical care to the poor, working with lay community members and trusted professional health workers in alternative facilities established by the activists."²⁹ The party simultaneously confronted health system neglect and the damage accumulated by overt racism in the research and clinical fields, which left a lasting rational suspicion by BIPOC of biomedical abuse and predation that lingers in primary care today. The positive and transformative impact on health workers who volunteered in the Black Panther clinics has been profound and lasting.³⁰

Federal policy ensures that sick-care spending prevails over primary care and prevention

The United States has long invested preferentially in health care treatment over primary care, prevention, and social service spending,³¹ and the federal government response to COVID-19 has followed the same unfortunate pattern.³² Had employers and commercial health plans paid hospitals using Medicare's payment formulas, total payments over the 2016–2018 period would have been reduced by \$19.7 billion, a potential savings of 58% that could be used to fund anti-racist primary care and prevention.³³ But because the medical industrial complex under the US system of racial capitalism stands to profit handsomely from sick care, incentives to shift investments toward social support, primary care, and prevention are lacking.³⁴ Global spending comparisons show that relative to other Organisation for Economic Co-operation and Development (OECD) countries, the United States consistently spends more on

health services and less on social services than all other OECD countries despite evidence that social supports improve population health.³⁵

The distribution of funds in the Coronavirus Aid, Relief, and Economic Security (CARES) Act again demonstrated that even within hospital-based care, private hospitals were prioritized over safety-net hospitals, defying public health and equity principles. Additionally, private hospitals refused or delayed service to people needing transfer to intensive care facilities from rural hospitals and lower-capacity hospitals serving primarily BIPOC communities.³⁶ Researchers who studied allocation of CARES Act and Paycheck Protection Program funds to examine the impact on BIPOC communities noted that disproportionately Black communities received the same level of relief funding as counties with less health and financial need, which resulted in inequity and inefficiency.³⁷ Another analysis of the first \$50 billion in relief grants showed that hospitals normally deriving most of their revenue from patients with private insurance received more than twice as much federal coronavirus relief funding per bed than the hospitals with the smallest share of private insurance money; institutions representing the top 10% of hospitals based on share of private insurance revenue received \$44,321 in COVID-19 relief per hospital bed, which was more than double the \$20,710 per hospital bed among hospitals in the bottom 10% of private insurance revenue.³⁸

Finally, the federal budgeting process requires Congressional Budget Office scoring frameworks and PAYGO (the pay-as-you-go requirement in federal budgeting, which prohibits creation of new fiscal deficits), with the costs and savings of federal spending calculated over five- and ten-year time horizons. This PAYGO approach creates structural barriers to appropriately valuing the long-term savings and secondary noneconomic benefits created by improved population health from public health and prevention programs.³⁹ Because budgetary forecasting necessarily manages doubt and unpredictability, and projections that extend beyond five or ten years are even more uncertain, actuaries and forecasters are hesitant to change this limiting time horizon. An example of the paradox produced by the PAYGO requirement is coverage of “expensive” treatment for HIV in the early 2000s, which was clearly life-extending, but did not generate sufficient return on investment to meet PAYGO requirements until an extended time horizon of analysis, making it more difficult for federal government officials to agree to pay for treatment.³⁹ Such structural barriers hinder anti-racist primary care, which should prioritize primary care access, prevention, and public health despite the longer time horizon for impact on health outcomes and savings in health spending.

Expansive workforce inequities undermine health equity

The December 2017 report of the United Nations Special Rapporteur on Extreme Poverty and Human Rights highlighted that the United States was far behind other developed nations in poverty alleviation and equitable health care access, which is dependent upon the availability of health providers.⁴⁰ Life expectancy in the United States consistently declined from 2015 through 2017, making it the only developed nation in the world to experience this trend.⁴¹ In the United States, the average life expectancy was 75.6 years for Blacks and 79 years for whites as of 2017.⁴² Among BIPOC and white communities living in the same city or county, life expectancy inequities were stark. For example, as of 2012, within Boston, Massachusetts,

the predominantly Black community of Roxbury had a life expectancy of 58.9 years compared with the predominantly white community of Back Bay, which had a life expectancy of 91.9 years (i.e., a gap of 33 years).⁴³

Even when elite academic medical systems are located in historically Black communities, they may prioritize attracting wealthy patients from across the country or even internationally instead of serving surrounding communities. In Boston, for example, *The Boston Globe* revealed that only 5% of patients receiving care at the Dana Farber Cancer Institute, a global leading institution in cancer care, were Black in 2017, despite the broad catchment area spanning regionally to internationally.⁴⁴

Health care providers are the cornerstone of health care systems globally and represent among the largest portions of nationwide spending for health budgets. Health providers serve as critical human capital. They care for the sick, design and implement preventive health strategies, conduct crucial research, and are first responders in public health emergencies, such as the COVID-19 pandemic. But primary care physicians have been undervalued and underpaid for decades.⁴⁵ Other providers, including nurse practitioners, physician assistants, and community health workers, among others, have been marginalized in the health care system and often overlooked or undervalued by physicians despite growing evidence of their effectiveness in delivering quality care.^{46,47}

In the United States, health professional shortage areas (HPSAs) are designated by the Health Resources and Services Administration as geographic regions, population groups, and facilities that have a lack of primary, dental, or behavioral health care providers.⁴⁸ The agency also defines medically underserved areas (MUAs) as those that lack access to primary care services defined through the ratio of primary medical care physicians to population, infant mortality rate, percentage of the population with incomes below poverty level, and percentage of the population age 65 years or over.⁴⁹ BIPOC are more likely to live in both HPSAs and MUAs.⁵⁰

BIPOC also face significant barriers to entering the health professions—a direct symptom of our system of racial capitalism. In the United States, only 4% of physicians are Black.⁵¹ Affirmative action programs in the 1960s and 1970s resulted in a doubling of underrepresented minority matriculants in medical schools.⁵² Unfortunately, the leveling off in such matriculants correlated temporally with the Supreme Court ruling against admission quotas in the case of *Regents of the University of California v. Bakke*, which outlawed the consideration of race in university admissions. Programs like the Association of American Medical Colleges' initiative “3000 by 2000,” which were successful in increasing representation of BIPOC in medical school, have unfortunately not been funded to continue. As a result of these and other trends, there were fewer Black men in medical school in 2014 than there were in 1978.⁵¹

To provide care to underserved communities, the US health care delivery system depends on the systematic appropriation of international physicians. About 40% of primary care physicians practicing in the United States are international medical graduates, who tend to practice in the most economically and educationally deprived communities.⁵³ Many international medical graduates are talented BIPOC physicians from the Caribbean and sub-Saharan Africa who have migrated to the United States for better job opportunities, improved salaries, the

option to work in better-equipped hospitals and clinics, and career development opportunities. The United States systematically avoids its duty to train BIPOC to be physicians, while it benefits from the educational investment made by immigrant physicians' countries of origin, without having to compensate those countries for their human capacity investments. For several decades, these trends have left global South countries with even worse health care access and quality.

Increasing the primary care workforce has been associated with reduced mortality and increases in life expectancy. For every 10 additional primary care physicians per 100,000 population, life expectancy increases by 51.5 days, while the same increase in specialist physicians is only associated with a 19.2-day increase in life expectancy.¹⁹ Primary care physicians are critical for preventive care, community outreach, chronic disease management, and other essential population health functions. Unfortunately, the mean density of primary care physicians relative to population size has decreased, from 46.6 per 100,000 population in 2005 to 41.4 per 100,000 population in 2015, with greater losses in rural areas in the United States.¹⁹ As the primary care provider shortage worsens, the adverse effects will disproportionately harm BIPOC communities who already have worse health provider shortages and suffer from a higher burden of chronic disease and poor health due to an unfair exposure to increased risk.

Anti-racist primary care workforce analysis

We sought to answer the question, how much would redistribution of the primary care workforce in a fundamentally anti-racist manner—that is, by redistributing preferentially to BIPOC communities—be expected to improve inequities in mortality and life expectancy? We performed statistical regressions with the primary outcome of age-standardized life expectancy at birth in a county, from the National Center for Health Statistics for the years 2010, 2015, and 2017 (having imputed estimates from 2015 to 2017).⁵⁴ The key independent variable of interest was primary care physician density, defined as the number of non-federally employed physicians younger than 75 years old who were not hospital residents and whose major professional activity was outpatient care in general practice, family medicine, general internal medicine, or general pediatrics, per 100,000 population in each US county and the District of Columbia ($N = 3,103$ counties), from the American Medical Association Physician Masterfile for 2010, 2015, and 2017.⁵⁵ We separately interacted the primary care physician density variable with each of three race/ethnic variables (the percent Black, percent Latino, or percent indigenous population in a county), to estimate how much more benefit may be achieved in high-minority counties than low-minority counties from an increase in primary care physician density.⁵⁶ We controlled for the density of specialist physicians reporting a principal activity of patient care per 100,000 population,⁵⁸ the urban or rural status of the county,⁵⁷ percentage of the population under the federal poverty threshold,⁵⁸ percent female,⁵⁹ unemployment rate,⁵⁹ density of hospital beds per 100,000 population,⁶⁰ percent enrolled in Medicare,⁶⁰ and medical care cost index⁶¹ (the relative cost of medical care in the county, in inflation-adjusted 2017 US dollars).⁶²

We performed quantile regressions to estimate how much life expectancy increases associated with an increase in primary care density differed for counties with lower minority versus higher minority populations. The quantile regressions were performed at the 25th, 50th (median), and 75th percentiles of minority population percentage across all counties (for each of Black, Latino, and indigenous minority populations), to understand how lower minority versus higher minority counties had different slopes in their regression line between primary care physician density and life expectancy. Regressions were performed after controlling for secular trends (including fixed effects for year) and calculating bootstrapped standard errors with clustering at the county level. Estimates were performed in R (version 4.0.2).

As shown in Table 1, among counties that are only at the 25th percentile of Black population proportion (0.8% Black), each additional 10 primary care physicians per 100,000 population had a nonsignificant impact on life-expectancy at the $p < 0.05$ level (from a baseline life expectancy of 78.6 years or 28,701 days). By contrast, counties at the 50th percentile (2.5% Black) averaged a 104.9-day increase in life expectancy for each additional 10 physicians per 100,000 (95% confidence interval [CI]: 14.6, 195.2; $p = 0.022$, from a baseline of 78.1 years or 28,518 days), and those at the 75th percentile (11.0% Black) had the greatest benefits, averaging a 175.1-day increase (95% CI: 100.4, 249.7; $p < 0.001$, from a baseline of 76.3 years or 27,853 days).

When conducting the regressions by percentiles of Latino population percentage, we estimated an even larger gain in life expectancy per each additional 10 primary care physicians per 100,000 population. Although the life expectancy gain was at least 130 days across all quantiles, it also increased as the Latino population percentage increased, to a gain of 252.3 days (95% CI: 156.8, 347.8; $p < 0.001$, from a baseline of 78.3 years or 28,605 days) among counties at the 75th percentile (9.5% Latino).

When conducting the regressions by percentiles of the indigenous population percentage, the life expectancy gain was similarly patterned, with a gain of 118 days among the 25th percentile counties (0.4% indigenous) up to a gain of 157 days among the 75th percentile counties (1.3% indigenous).

Toward an anti-racist primary care agenda

A model of equitably distributed primary care physicians and services should not be created from scratch, as a number of real-world examples exist that offer elements or whole programs that can be emulated in the United States. We would argue that it is essential, however, that any model considered introduce a foundation of community control and accountability. Community-based approaches to program planning allow for novel ideas and frameworks that can help avoid planning pitfalls generated by ignorance of the communities served. Ensuring that community members shape primary care development means that local issues are taken into account, health services are relevant to specific community needs, greater public acceptability and accountability is attained, future directions are equitable, and community members are able to participate—through paid work—in primary care delivery.

Table 1. Regressions of Primary Care Physician Density Against Age-Standardized Life Expectancy

Minority population	Percent of county populations that are of each minority group (%)			Baseline life expectancy in years (interquartile range) and days			Estimated change in life expectancy in days from each additional 10 primary care physicians per 100,000 population in county (95% confidence interval; <i>p</i> -value)		
	25th percentile among counties	50th percentile among counties	75th percentile among counties	25th percentile among counties	50th percentile among counties	75th percentile among counties	Counties at the 25th percentile of minority population	Counties at the 50th percentile of minority population	Counties at the 75th percentile of minority population
Black	0.8	2.5	11.0	78.6 yrs (77.5, 80.1), or 28,701 days	78.1 yrs (76.7, 79.6), or 28,518 days	76.3 yrs (74.7, 77.7), or 27,853 days	+47.9 (-25.9, +121.7; <i>p</i> = 0.204)	+104.9 (+14.6, +195.2; <i>p</i> = 0.022)	+175.1 (+100.4, +249.7; <i>p</i> < 0.001)
Latino	2.2	4.1	9.5	77.2 yrs (75.3, 79.2), or 28,202 days	77.7 yrs (76.0, 79.5), or 28,389 days	78.3 yrs (76.9, 79.7), or 28,605 days	+131.2 (+49.6, +212.9; <i>p</i> = 0.002)	+197.3 (+101.0, +293.6; <i>p</i> < 0.001)	+252.3 (+156.8, +347.8; <i>p</i> < 0.001)
Indigenous	0.4	0.6	1.3	77.4 yrs (75.6, 79.3), or 28,267 days	77.9 yrs (76.2, 79.6), or 28,451 days	77.9 yrs (76.6, 79.4), or 28,457 days	+118.0 (+18.0, +217.9; <i>p</i> = 0.021)	+133.1 (+38.5, +227.6; <i>p</i> = 0.006)	+156.7 (+58.7, +254.7; <i>p</i> = 0.002)

We performed quantile regressions to estimate how much life expectancy increases associated with an increase in primary care density differed for counties with lower minority versus higher minority populations. The quantile regressions were performed at the 25th, 50th (median), and 75th percentiles of minority population percentage across all counties (for each of Black, Latino, and indigenous minority populations), to understand how lower minority versus higher minority counties had different slopes in their regression line between primary care physician density and life expectancy. Regressions were performed after controlling for secular trends (including fixed effects for year) and calculating bootstrapped standard errors with clustering at the county level. Estimates were performed in R (version 4.0.2).

Global models of success: Community health workers and beyond

One mechanism for participation of community members in primary care delivery is by integrating community health worker (CHW) programs into primary care delivery models. CHWs are frontline public health workers who come from the communities they serve and continue to be embedded within these communities, providing knowledge and a basis for trust in patient care. CHWs liaise directly with other health care workers, including doctors and nurses.

It is now clear that well-designed CHW programs in the United States not only positively impact health outcomes, but may also supply a return on investment (as much as \$2.47 to an average Medicaid payer for every dollar invested).⁶³ Although a number of political barriers remain to scaling CHW programs nationally, their broader inclusion within the primary care landscape can be a boon for underserved patients and BIPOC who are underrepresented in other health professional roles.

One primary care model that is a reference for equitable population-based health care coverage is Cuba's primary health care delivery system. The Cuban primary care system includes a primary care nurse and doctor-staffed clinic (*consultorio*) for every 600–700 people,⁶⁴ both in rural and urban settings, to achieve universal access. The physician and nurse live on the city block or in the rural community in which they serve, and these teams are also stationed in factories and schools. The primary care system is a bedrock of the equitable and efficient Cuban health system, ensuring that primary doctors are nearby and integrated into the community. Applying a similar geospatial and physician-integrated approach into US primary care design would potentially have an important impact on primary care access, although race-specific measures—beyond such universal initiatives—are needed given the persistent impact of racism in the United States at every socioeconomic level.⁶⁵

Another relevant model is that of the US's northern neighbor, Canada. Canada's health care system provides universal access to primary care through a decentralized, publicly funded (on a per capita basis) set of clinics in each province or territory. The primary care system was leveraged during the COVID-19 pandemic as part of the COVID-19 Primary Care Pathway, in which the province of Alberta standardized virtual care rapidly.⁶⁶ Essential to this approach was a focus on social wraparound services for the most vulnerable patients that included connections to community agencies that provided income support, food and meal delivery, isolation hotels, and linguistically and culturally appropriate support. The ability to recognize “safety-net flags,” including social isolation, food insecurity, low health literacy, and lack of caregiver support, was a built-in functionality essential for providing equitable, as opposed to simply equal or universal, primary care. The pathway may have utility beyond the pandemic, as a tool for linking primary care with community initiatives.

Other international models provide further learnings for the US system. The Basque Country, an autonomous region in northern Spain with the highest life expectancy in the European Union, has a universal health care coverage system for all 2.2 million of its residents, through a single-payer, tax-funded model. In 2010, recognizing the impending crisis of an aging population combined with economic strain and an increased burden of chronic disease, the Basque government launched a program that inculcated “a culture of shared leadership” to achieve a “balance between top-down and bottom-up change.”⁶⁷ The five core elements of the program, carried out through integrated health organizations—hospital and primary care structures within a single organization and with a shared strategic plan—were “a population health approach; prevention of chronic illnesses; patient responsibility and autonomy; integrated care; and efficient interventions adapted to the needs of the chronically ill patient.”⁶⁸ The Basque integrated health organizations focused on building “relationships with the community-based social support agencies,”⁶⁸ which resulted in coordination between health

facilities and community-based resources in housing, employment, integration, or food support. The model has led to reduced health care costs, reduced hospitalizations, and improved patient reports of care coordination, with two-thirds of patients stating the coordination between health and social services was good or very good.⁶⁹ Within the US health care system, accountable care organizations could benefit from a similar approach as the Basque integrated health organizations, one that would significantly address issues of equity, community self-determination, and accountability. Such innovations have recently begun, most notably with the Accountable Health Communities approach that comprehensively screens for social needs among Medicare and Medicaid beneficiaries and provides assistance while analyzing the health and care utilization impacts of the model.⁷⁰

Reparations are foundational in anti-racist primary care

Health workers have a moral obligation to understand and address health inequities. Applicative justice, which describes injustice as a curable ill, attempts to revolutionize how health care system resources are distributed in order to advance anti-racist primary care.⁷¹ To fight historical and ongoing structural inequities, guiding principles from applicative justice are useful: (1) when giving priority to the worst off, address historical and ongoing discrimination; (2) prioritize equitable treatment rather than equal treatment (meaning that historically marginalized populations will need more than their equal share of resources to reduce inequity); and (3) maximize health care outcomes within and among communities. Applicative justice also demands that reparations be implemented to address the historical atrocities and the health inequities experienced by today's marginalized BIPOC communities.⁷¹ Unfortunately, few places have implemented this approach to date.

Based on modeling of COVID-19 outbreaks in South Korea and Louisiana, evidence shows that COVID-19 transmission and mortality would have been significantly decreased if monetary reparations had been paid to Black American descendants of enslaved people prior to the start of the COVID-19 pandemic.⁷² By increasing wealth amongst Black American descendants of enslaved people, reparations would have decreased Black Americans' overrepresentation as frontline workers, decreased rates of living in overcrowded housing, and increased access to things like personal protective equipment and hand sanitizer, all of which would have reduced COVID-19 transmission amongst Blacks and the community at large. As a result, prominent academics have called for reparations for US enslavement of Africans as a key solution to racial health inequities related to COVID-19, other infectious conditions, and chronic diseases.⁷³

Reparations, usually described using legal frameworks, have not been prominently discussed in a health or health equity context until the COVID-19 pandemic.⁷³ Economists have advanced the moral and academic evidence base for reparations for Black American descendants of persons enslaved in the United States—using a framework of acknowledgment, redress, and closure—and described why it is the responsibility of the federal government rather than locales to implement reparations.⁷⁴ Because the federal government failed to deliver its promise of land grants to newly emancipated Americans at the end of the civil war, the racial wealth gap between Blacks and whites persists in modern America and influences several other outcomes, including racial health inequities.⁷⁵ Thus, policy solutions that advance applicative

justice and anti-racist primary care frameworks must uplift reparations as a critical path forward in addressing racial health inequities as well as reestablishing the trustworthiness of institutions like the federal government.

Anti-racist primary care health policy opportunities and limits

Health policy solutions for racial health inequities are numerous but are often considered not politically feasible because of ongoing white supremacist ideologies and values, acknowledged or not. Our review provides only a limited sampling of the plentiful opportunities for policy action that would advance anti-racist primary care, but political will to act on these policy proposals at the time of this writing appears limited.

Potential sources of funding for the programs and policies discussed in this chapter abound. For example, nonprofit hospitals, many of which are academic medical centers, benefit from significant tax breaks, especially on real estate, but wealthy organizations like Harvard University do not currently fully contribute to voluntary programs like Payment in Lieu of Taxes (PILOT).⁷⁶ Full contributions to PILOT programs could increase local government funding of essential and underfunded sectors like public health departments. Similarly, declaring racism a public health crisis at both local and federal levels has the potential to mobilize funds and realign priorities to meet the material needs of BIPOC communities while advancing healing and racial justice.⁷⁷

A public policy prescription to advance anti-racist primary care should at a minimum include:

Fully funding the Indian Health Service (IHS). For years, the National Congress of American Indians has called for full funding of the Indian Health Service, which is currently funded at less than half the national per capita federal funding rate, to ensure equity and address the unjust racial health inequities in outcomes for indigenous communities.⁷⁸

Medicare for All. Health workers, activists, and communities across the country have been calling for Medicare for All as a solution for massive health inequities, barriers to accessing care, and rising costs in the health care industry.⁷⁹ Despite extensive support for the policy across the nation, including support by 69% of voters, it did not become a part of the Democratic party platform or presidential candidate Joe Biden's plans in 2020.⁸⁰

Federal workforce equity programs and federal funding for community health workers. Primary care is not considered an attractive career path, and the lives of Americans are unnecessarily shortened because of gaps in primary care access. Federal policies to incentivize work in HPSAs and MUAs are urgently needed as are policies to increase racial diversity in medicine. Despite growing evidence of the benefit of CHWs in cost-effectively improving health outcomes, increasing trust, and addressing social determinants of health, CHWs are still not funded at the federal level.⁶³

Housing first. Housing is one of the most important rights and should be easy to ensure in a wealthy democracy like the United States, but only one in five renters has access to the

assistance they need, and the number of unhoused individuals has not improved due to inadequate funding for the Department of Housing and Urban Development.⁸¹

Increased federal funding for public health. As the COVID-19 pandemic has demonstrated, funding must be allocated to modernize public health departments and public health preparedness. Federally qualified health centers (FQHCs) should be fully funded as entitlements instead of through annual appropriations. The Anti-Racism in Public Health Act would create a Center on Anti-Racism in Health at the Centers for Disease Control and Prevention, while improving the federal government's ability to develop anti-racist health policy and creating a law enforcement violence prevention program at the CDC.⁸²

Criminal legal reform. The BREATHE Act, developed by the Movement for Black Lives in partnership with hundreds of community-based partner organizations, shifts funding from defense and carceral programs to community-led justice, housing, health programs, and commissions to advance justice, carceral reform, and health equity.⁸³

Reparations for Black American descendants of persons enslaved in the United States. Reparations would have a meaningful impact on decreasing the racial wealth gap and thus meaningful impact on the social determinants of health and health outcomes. If the promise of racial justice and health equity is to be fulfilled, reparations must be paid by the federal government to Black American descendants of persons enslaved in the United States.

Conclusions

In this chapter, we argued that the origins of racial health inequities in the United States are rooted in the country's settler colonialism and racial capitalism, but that forms of resistance through US history—including community health centers, community health care workers, and progressive activism—are important sources of potential hope in repairing the historical legacy in the United States. Further investments in public health, primary care, and prevention—pivoting away from a sick-care model—are vital for the reduction of inequities along race lines. Nevertheless, we argue that a combination of health, economic, and social policies—including reparations—are vital to fully adopt an anti-racist agenda in the primary care space.

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Building Community-Engaged Primary Care: Returning to Our Roots

Ann Hwang

Primary care has long been oriented toward serving the needs of our communities, and it is steeped in a tradition that emphasizes community participation and leadership. In the United States, the community health center movement was birthed in the civil rights movement, at a similarly tumultuous time in our nation's history. Its beginnings were embedded in a broader agenda of community action, which attacked poverty and powerlessness at the neighborhood level and emphasized maximum participation of community members themselves.

The COVID-19 pandemic has exposed the weaknesses of the US primary care and community health infrastructure along with our increasingly tattered social safety net. Even as we combat the devastation wrought by COVID-19 and magnified by a shocking degree of political and operational dysfunction, we have an obligation to plan for a better, more resilient, and more equitable future. In this work of rebuilding, we would do well to go back to our roots of a community-oriented, mission-driven model of care.

In this chapter, I provide a brief introduction to the recent history of primary care and patient and community engagement in the United States, survey definitions of engagement, and suggest opportunities for improving engagement during and after the long winter of COVID-19. I focus in particular on the role of primary care in serving low-income populations. In this role, I argue for expanding engagement from its current inward focus to a muscular, activist engagement that breaches the four walls of the clinic to address the fundamental social and economic conditions that are driving health inequities in the communities we serve.

Primary care's strong history of community engagement

Primary care has a long and proud tradition of community orientation and of emphasizing community participation and leadership. From its beginnings, the health center movement incorporated a strong emphasis on community empowerment. The progenitor health center site, the Delta Health Center, was established in Bolivar County, Mississippi, in the 1960s, and its first employee was Dr. John Hatch, the director of Community Health Action. Before establishing Bolivar County as the location of the center, Dr. Hatch spent several months living with poor families in the area and working as a farm laborer. As he put it, “Experiencing diarrhea in a crowded rural home without toilet facilities is considerably more impressionable than reviewing data on the high rate of intestinal disorders.”¹

The Delta Health Center's focus went far beyond provision of clinical services. In a foreshadowing of many of the issues that we continue to encounter today, the center challenged exclusionary lending practices, established a bus transportation system, addressed educational and employment opportunities, and established a farming program to tackle one of the greatest challenges faced by the community: widespread hunger.²

Community empowerment and leadership was as much as—if not more than—a part of the vision and impact of the Delta Health Center as clinical services. Structures for governance included 10 local community health associations and the North Bolivar County Health Council, which represented all of the local communities, developed programs, operated significant components of the health center program, and served as the owner, the governing body for the health center program.³

The health center program was established under the Office of Economic Opportunity and was part of the War on Poverty. As such, it had a particular focus on building power among poor populations, urban and rural. When legislation authorizing community health centers as a permanent program was passed in 1975, it mandated that all centers have a consumer-majority governing board.⁴ Over time, and through a number of different administrations, the emphasis on community organizing, job creation, and nonhealth services has generally waned, though some centers have been successful in maintaining a strong culture of patient and community engagement.⁵

The community-organizing aspect of the health center movement has not extensively permeated primary care as a whole, with models for community leadership and ownership being the exceptions that prove the rule. However, over the past few decades, there has been a renewed focus on mechanisms for patient and family engagement in health care and an understanding that—perhaps not surprisingly—being able to engage patients and families matters for achieving high-quality care.

In its landmark 2001 report *Crossing the Quality Chasm*, the Institute of Medicine named patient-centeredness as one of six aims for the health care system, and subsequent work identified strategies for incorporating patient engagement in patient-centered medical home models.⁶ This priority was reflected in the 2015 National Quality Strategy, which included an emphasis on “ensuring that each person and family is engaged as partners in their care.”⁷

In recent years, a number of primary care transformation efforts, such as the Comprehensive Primary Care Initiative and the Comprehensive Primary Care Plus program, both developed by the Center for Medicare and Medicaid Innovation, have incorporated a focus on patient and family engagement. The American College of Physicians issued a position paper with principles for authentic patient and family engagement in health care.⁸ And numerous organizations, including my own, have developed toolkits and best practice guides.

Despite these efforts, engagement is generally not the norm in primary care in the United States, as suggested by data on one specific structure for engagement—the patient–family advisory council. A review of community health centers in Arizona, California, Nevada, and Hawaii found that 69% had advisory councils.⁹ A survey of 112 patient-centered medical homes found that only 21% had a patient–family advisory council.¹⁰ A survey of family medicine physicians found that 24% of respondents reported that their practice had a patient advisory council and that 19% had patient members on their board of directors.¹¹ Among geriatricians, the percentage of respondents reporting that their work site has a patient advisory council was 28%.¹²

As we shape the next chapter for primary care, we have an opportunity to go back to our roots and to reenvision primary care, in the words of community health center founder Dr. Jack Geiger, who recently passed away, “as an instrument of social change.”³ This will require rebuilding our focus on patient, family, and community engagement and reclaiming the potent legacy of primary care as a contributor to a broader movement for addressing poverty, racism, and inequity.

Defining engagement

The term *engagement* in health care is often used to encompass a broad set of concepts and practices that seek to better orient care with patient, family, and community goals. The National Academy of Medicine has defined patient- and family-engaged care as “care planned, delivered, managed and continuously improved in active partnership with patients and their families (or care partners as defined by the patient) to ensure integration of their health and health care goals, preferences and values. It includes explicit and partnered determination of goals and care options, and it requires ongoing assessment of the care match with patient goals.”¹³ This paradigm holds the potential to improve health and health care outcomes by actively engaging patients and families as true partners in their care and in the redesign of health care policies, programs, and practices.

Relatedly, in the field of public health, community engagement has been defined as “the process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the wellbeing of those people.”¹⁴ In this chapter, I intentionally draw on engagement’s health as well as public health lineages, as both intersect with primary care’s role in health, health promotion, and social change.

Strategies for fostering engagement can be grouped into those occurring at the clinical, organizational, and policymaking levels.¹⁵ Examples of interventions to improve engagement at the clinical level can include shared decision-making and patient goals-directed care. Organizational-level interventions could include establishing structures for patient and community input into health system initiatives, quality improvement, and other clinic or health system activities. In policymaking, engagement strategies include building consumer representation in governance and oversight bodies, establishing advisory structures for consumer input, and strengthening the voice of politically vulnerable constituencies.

At each of these levels, there can be varying degrees of engagement. Several frameworks have worked to delineate a spectrum of engagement, including an effort by the Centers for Disease Control and Prevention that conceptualizes community engagement as ranging from outreach to consultation, involvement, collaboration, and shared leadership.¹⁶ Particularly when thinking about engagement in programs and policy, the political science domain also provides helpful heuristics for understanding the manifold opportunities and pitfalls for citizen participation. Arnstein's classic "ladder of citizen participation" groups eight degrees of participation into categories of nonparticipation (manipulation, therapy), tokenism (informing, consultation, placation), and citizen power (partnership, delegated power, citizen control).¹⁷ A more recent model, the "democracy cube," analyzes opportunities for participation along three dimensions: who is participating, what power do participants have, and what is the mode for decision-making.¹⁸

These different frameworks are helpful to keep in mind when thinking about the different dimensions of engagement. Broadly speaking, there are opportunities to increase engagement at each of the three levels, which I address next; within those levels, there are opportunities to deepen the degree of engagement.

Improving engagement in the clinical setting

Even as clinical care in the United States has undergone seismic changes due to COVID-19, the need for us to engage patients and families in care has only increased. I focus on two specific aspects of patient and family engagement in care: (1) better aligning care to patients' goals, values, and preferences and (2) reimagining primary care as a service, freed from the site constraints of traditional fee-for-service billing.

Clinicians have an important role to play in ensuring that patients' goals, values, and preferences guide the plan of care. Shifting from a disease-centered approach to a patient-goal-directed approach begins with clinicians eliciting patients' health outcome goals and care preferences.¹⁹ The importance of goal-concordant care has only been heightened by the pandemic, with difficult decisions to make around level and setting of care, particularly given that these decisions could mean not being able to see one's loved ones. Resources such as the GOOD (Goals, Options, Opinions, Documentation) framework, templates collected by the Coalition to Advance Palliative Care COVID-19 Response Resources Hub, and the "4M" framework (what matters, medication, mentation, and mobility) of the Age-Friendly Health Systems movement are just a few examples of the tools that could be useful for understanding patients' goals and

priorities.^{20,21} Throughout our clinical work, our ability to connect with and build trust with patients and families will be critical, as information about COVID-19 prevention, testing, and treatment continues to emerge in a highly scrutinized and politicized context.

A second opportunity for engagement comes from how COVID-19 has started to redefine what primary care actually is. While prior to COVID-19, reimbursement (and thus practice) was driven largely by in-person visits, during the pandemic peak in the spring of 2020, the fundamental service of primary care shifted to one of multimodal engagement (by gateway, email, phone, and video), care coordination, and case management, with a smaller role for traditional, in-person office visits. Although the demise of fee-for-service medicine has been long anticipated yet still unrealized, the glimpse of the future that COVID-19 offers suggests a future state more aligned to global payment models where a primary care clinician would have accountability for the care of a panel of patients, regardless of the site of care and whether that care is broken out into discrete, CPT-sized chunks. In the optimistic, ideal vision of that future, clinicians would modulate their care delivery—both the “what” and the “how”—to what patients and families want and need, and be closely attuned to identify and address access gaps and inequities, whether these are due to socioeconomic status, access to necessary equipment and connectivity, disability, literacy, or medical and behavioral health conditions. Achieving this vision, while avoiding the pitfalls of payment reform initiatives of the past, will require the time and attention of US primary care leaders, in partnership with patients, families, and community leaders.

Improving engagement at the organizational level

The community health center model included a formal requirement for community governance and leadership. This standard is not widely replicated in the United States outside of community health centers, though many health care organizations do have other mechanisms for patient, family, and community input. These structures include patient and family advisory councils, participation on quality improvement teams,²² engagement in staff training and orientation, participation in research, and involvement in administration of community benefit programs. Across the board, structures promoting transparency, visibility, and inclusion are an important component for building a culture of patient and family engagement. When carried out deliberately and intentionally, with attention to the dynamics of power, racism and discrimination, they can generate communication and feedback loops between leadership, frontline clinicians, and patients, families, and community members that can foster co-creation of a patient-centered health care system.^{23,24}

As primary care organizations contemplate their future, engagement becomes more important than ever to ensure that our future system is built around the needs of the patients, families, and communities we serve. Focus groups exploring what low-income patients want from primary care surface several consistent themes around trust, relationships, ease of access, availability of services (including nonmedical services), and responsiveness to community needs.^{25,26}

This ideal system is far from what exists in most places. To achieve it will require a stronger voice for consumers and communities in creating this blueprint, and will require advocacy

on the part of consumers, providers, payers, and policymakers alike to be successful. Within organizations, there are opportunities to deepen engagement and move up the ladder of engagement to truly share power and leadership. One place to start is by examining existing engagement structures, working to reinvigorate those structures, and identifying opportunities to build new mechanisms for engagement.

Much like how the civil rights movement gave shape to the community health center movement in the 1960s, the convulsions of our time call out for creative and bold approaches for community leadership. Community-ownership models are rare but promising,²⁷ and embolden us to reconsider whether our current business orientation in health care is the best model for primary care moving forward. Even within more traditionally structured organizations there are powerful opportunities to grow organizations' roles as anchors and economic engines for their communities.

Improving engagement in policies and programs

Over the past several years, there has been an effort to build and reinvigorate community engagement in the design, implementation, and oversight of health care programs and policies. Since the 1970s, states have been required to operate advisory committees for their Medicaid programs, though reviews of these structures suggest that a lack of resources and other constraints limit their effectiveness.^{28,29} More recently, the Financial Alignment Initiative, which launched integrated health plans serving Medicare-Medicaid beneficiaries, included requirements for states and health plans to establish advisory structures for beneficiary input.^{30,31} Medicaid accountable care organizations have also created structures for consumer engagement,^{32,33} and nonprofit hospitals are required by Internal Revenue Service regulations to obtain community input into how they deploy their community benefit dollars.³⁴

Program enrollees have direct insight into whether a service is operating as intended and are therefore a critical voice for troubleshooting and rapid cycle improvement. With COVID-19, citizen participation has become more important than ever and we should seize the moment to rebuild the conditions necessary for civic participation. This includes establishing structures for consumer input, but also supporting the infrastructure of community organizations that focus on empowerment and civic engagement among low-income populations. Building consumer and community input to shape Medicaid policy should be a particularly important area of focus, given Medicaid's critical role in serving low-income, politically vulnerable populations and because its structure, policy, and operation can further diminish participants' sense of political engagement and activation.³⁵

Conclusions

As we continue to adapt to life with COVID-19, and simultaneously imagine what comes next, this is the time for primary care to expand engagement from an inward focus—on improving clinical care—to an outward one. The lives of our patients and their families take place outside of our walls. Even well-intentioned efforts to address social needs can fall into a “fantasy paradigm” that presumes that short-term, targeted interventions can somehow address the fundamental inequities that drive poor health.³⁶

Primary care clinicians can make common cause with consumers and community organizations working to shore up our badly eroded health and social safety net. We have both the power of the privilege of our professional identities and the responsibility that comes with our role in bearing witness. Although the role of advocate may feel unfamiliar to some clinicians, professional physician organizations have endorsed physicians’ responsibility in addressing societal needs. The American Medical Association’s *Declaration of Professional Responsibilities*, passed in 2001 and reaffirmed in 2017, states that physicians must “advocate for the social, economic, educational, and political changes that ameliorate suffering and contribute to human well-being.” Similarly, in 2002, the American Board of Internal Medicine Foundation, in conjunction with the American College of Physicians Foundation and the European Federation of Internal Medicine, authored *Medical Professionalism in the New Millennium: A Physician Charter*. This charter articulated a fundamental principle of social justice and affirmed that the “medical profession must promote justice in the health care system.”

In these times, the paradigm for engagement needs to broaden and deepen. It needs to expand its scope beyond a narrow focus on clinical care to confront the social, economic, and environmental circumstances that indelibly shape health. Simultaneously, it needs to deepen, to examine the uncomfortable dynamics of power and privilege, to create room for the transformational work of engagement that can strengthen the very fabric of society.

COVID-19 has doubly worsened inequity in the United States, through its impacts on health and the economy. This is a time to reexamine how primary care can draw from its history of building empowerment and economic opportunity and reclaim our heritage as advocates. The times that we are in call for us to partner with patients, families, and communities in a way that is both old and new, that draws from our heritage yet pushes the frontier of what is possible.

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Integration of Primary Care and Oral Health

Hugh Silk

Primary care, like the rest of medicine, has been significantly challenged during the COVID-19 pandemic. Especially in the beginning, the public was reluctant to visit emergency rooms and hospitals, while other medical care sites such as urgent care and specialty offices were often closed or limited in hours. Emergency departments saw 40% fewer patients during the early months of COVID-19.¹ Although primary care dipped in in-person visits, telemedicine visits rebounded very quickly.² Even as offices remained at lower overall volume, the calls for reassurance and health inquiries continued to pour in.³ Patients knew they could get answers from their primary care providers (PCPs). Patients called about every topic, and if they could not contact a specialist, they called their PCP. In some cases, primary care offices were initiating the calls to check on patients. The Primary Care Collaborative surveyed PCPs and patients throughout the spring and confirmed this special long-term relationship played an important role during the pandemic.⁴ One of the important conclusions of the surveys showed that more than 70% of respondents reported having a usual source of care and a “doctor they can trust,” and two-thirds felt their “doctor helps them make sense of what’s going on with them.”

During COVID-19, many calls and visits to PCPs included oral health issues. PCPs are not well trained in dealing with oral health issues, and yet Ian McWhinney, the grandfather of family medicine in Canada, said that a good generalist is a “manager of resources.”⁵ This is especially true during crises and accurately defines the role of primary care during the pandemic with all the many uncertainties it has brought.

Dr. Lisa Simon outlined in an earlier chapter the historical context for medical-dental disintegration, including a reliance of patients on the emergency room for urgent dental care needs. She also explained that much more of the population visits a PCP than a dental provider. Finally, she

outlined how the dental industry is returning to its former routine of seeing patients, and yet many aspects of the dental public health force (e.g., school-based health) continue to be devastated by the pandemic. All of this puts the country at risk for maintaining the same level of disparities currently present in the US oral health system. Dr. Caswell Evans et al., in an earlier chapter, delved further into the details of these inequities, clarifying that the majority of preventive care is provided to those who need it the least, resulting in a great deal of acute care being needed by those from lower socioeconomic backgrounds. The authors outlined the complexity of the problem, from inadequate public dental coverage and access issues, to providers who are not well educated in social determinants of health and the need for drastic change in delivery of care, including diverse locations, expansion of providers, and more noninvasive care. These collective conclusions highlight a new focus on the role of PCPs in the fight for better oral health across the United States during and post-pandemic, especially in populations that are experiencing health inequities. In this chapter, I look closer at this emerging and evolving role for primary care and the essential need for an improved relationship between dental and medical systems and providers to finally address these care gaps.

Bridging the historical medical-dental disconnect

Prior to the pandemic, medical and dental care professionals operated mainly in their silos. This issue of separation between medical and dental services contributes to health disparities; those who are isolated within the health care system are also usually isolated in the oral health system and often have to navigate it for themselves. This is due to both societal bias and racial injustice, as well as institutional bias and unfairness in the health care infrastructure and systems. However, there are impressive examples of early adopters who have developed effective models of medical-dental integration that offer hope for addressing these inequities.⁶ Their work has overcome a system of two different health insurance systems, different offices, and—unlike collaboration between the specialties of medicine—limited communication and coordination.⁷ For those health systems that are working in this sphere, the Substance Abuse and Mental Health Services Administration and Health Resources and Services Administration’s six-level framework of “coordinated, co-located, integrated” is a model that many are embracing.⁸ In Massachusetts, the MassHealth accountable care organization (ACO) model has five levels along the spectrum of integration, evolving from a formal referral process to full integration.⁹ Examples of success include a range of possibilities, from integrating a dental hygienist into primary care to sharing electronic health records.^{10,11}

Efforts to date fall into categories that mimic the levels of coordination just mentioned. On the most basic level, having PCPs actually take notice of the importance of oral health and begin to address it in their office with oral exams, dental hygiene advice, and fluoride varnish application is an essential first step. Medical providers’ lack of interest in oral health is often a result of their education, with many not being trained in oral health concepts at the undergraduate and graduate levels.¹²⁻¹⁷

The most famous and comprehensive example of PCPs changing their style of practice is in North Carolina with the Into the Mouths of Babes initiative. Thousands of PCPs have been

trained in dental care, resulting in hundreds of thousands of oral health interventions in medical offices and ultimately leading to a statistically significant reduction in caries for the children of North Carolina.^{18,19} This approach includes training PCPs to assess risk, provide caregiver education, and apply fluoride varnish to young children. This requires altering office flow and ensuring reimbursement. The results include a 20% reduction in caries, including a reduction in the gap in disease prevalence between those from higher and lower incomes. Many other states, like Ohio and Iowa, have similar initiatives that focus on the role of the PCP in addressing oral health in their offices.^{20,21} These are important first steps to addressing equity, as prevention is extended to more children from different backgrounds who otherwise would go without dental preventive services. Yet, these efforts alone do not address access to the dental office. Although these efforts encourage dental referrals, other projects have offered more focus on the dental referral from the primary care setting.

With more children visiting a PCP than a dental provider, the coordinated dental referral from the primary care office has the potential to be a game changer for initiating access. A North Carolina study demonstrated that children who are referred to dentists by primary care providers are three times more likely to actually see a dentist.²² Of course, there are many other aspects that need to be addressed, as outlined by Evans et al., including insurance coverage, societal change, and dental provider attitudes.

Although work continues on these enormous issues, we also need to improve the process for the pipeline of referrals to dental care providers. The Health Policy Institute at the American Dental Association has shown that physicians are frustrated with the current system for dental referrals. It lacks the ease with which physicians are used to making referrals to other specialists.²³ Concerted efforts backed by grant funding have helped some health centers to overcome this. According to a systematic review of referral rates from primary care to secondary specialists, conducted by the Cochrane Database, this is what is needed: active local educational interventions that involve the secondary care specialists, coupled with structured referral templates.²⁴ DentaQuest's Medical-Oral Expanded Care (MORE) initiative has focused on this referral process.²⁵ They have worked with rural agencies in South Carolina, Colorado, and Pennsylvania to improve referrals. One technique they have used is to employ community dental health coordinators, who can help with unique, local logistics.²⁶

Bringing these two types of initiatives together, PCP oral health awareness and better dental referral systems, is a comprehensive strategy for addressing oral health in the PCP office and getting patients to the dental setting in a timely and systematic manner. Qualis Health, in its document *Organized, Evidence-Based Care: Oral Health Integration*, outlined a clear process for improving workflow in the office and systemizing referrals as part of the after-visit process.²⁷ The authors described the barriers, drivers, and roles for each member of the team with the mantra "Ask, Look, Decide, Act, Document." Qualis has worked with sites from Washington to Kansas and from Massachusetts to Kentucky. It has documented the success and barriers.²⁸ In another example, Harborview Medical Center in Seattle implemented change and then over two years was able to measure an improvement from zero obstetrical patients being referred to the dentist to an increase of 50% of patients being referred. Another example is the Bluegrass Community Health Center (BCHC) in Lexington, Kentucky, which has a protocol

for assessment and referrals. BCHC uses its electronic health records (EHR) to close the loop, checking whether patients followed through on a referral when they attend their next PCP visit. What BCHC lacks is the next level of integration of a shared EHR to avoid the work-arounds that so many are forced to use to see if the patient attended the dental visit and what the outcomes were.

The organization on the forefront of medical-dental integration is Marshfield Clinic in Wisconsin. All providers have access to the same information in a shared EHR, thereby reducing the need to contact PCPs to check on medication lists or test results on the dental side; and medical clinicians know when their patients have been seen in a dental office and what was done.²⁹ Furthermore, the system can run data on groups of patients, such as those with diabetes, and find out who has been seen in the past 12 months. They can then reach out to patients who need a dental visit.³⁰ This shared use of the EHR moves PCPs from addressing oral health and making referrals from their silo into a sphere of working together virtually. This is yet another step in the direction of improving inequities through improved communication and reduction in inefficiencies of care. This is particularly important for those populations that heretofore have been lost to follow-up, misplaced in the system, or never engaged in the first place. This powerful tool of a shared EHR has the potential to offer all patients the same reminders, follow-up, and notices of missed care that systems with no communication lack.

The highest levels of coordinated care include colocation and full integration. Many Federally Qualified Health Centers (FQHCs) have medical and dental practices colocated. This can be ideal for integration; however, it is not very useful if the two departments are not communicating, planning, and referring to one another in a coordinated manner. In other words, colocation alone does not result in integrated care.³¹ Two examples of fully coordinated care come from opposite sides of the country. The Dimock Center in Boston, Massachusetts, has a system for screening children, referring them, and checking on referrals through a shared EHR via eClinicalWorks.³² This coordinated effort has seen an increase from zero screenings and fluoride varnish applications to 80% of patients receiving these services, and 35% of patients getting to the dentist. Meanwhile, Terry Reilly Health Services in Boise, Idaho, has added all of this as well as checklists for integration and case conferences.³³ The clinic does this with behavioral health as part of the team. Coming together to discuss specific patients as a team is a high-level process of organized care that has the potential to offer very personalized care to patients in need. To succeed, the process took a lot of organization, champions, and analysis of the process followed by incremental changes. This level of coordinated care requires leadership, buy-in at all levels, and systems in place to make it easy for the busy clinicians and their auxiliary staff to complete the process. Yet, this is what is needed if we are going to offer effective care to vulnerable populations; this is what health equity looks like. It is challenging; it requires up-front planning and financing; and in the end, it saves lives and money when wellness is improved through fair and efficient systems.

Clearly these health centers, systems, and case examples give hope for the future. These early adopters have worked through the barriers and studied what works. Their results are well documented, as are the steps they took. We need to consider how the pandemic affects these

levels of integrated care offerings and how a crisis like the pandemic might ultimately push coordinated care to a new level.

Oral health during the pandemic and the role of primary care

Simon and Evans et al., and others in this field, have presented the fact that there are egregious rates of disparities in oral health care in the United States, with Latino and Black populations, as well as poor or less educated patients, experiencing more dental caries and less access to formal dental care.^{34,35} With even less access during the pandemic, the disparities naturally widened.^{36,37} Society will need momentous changes to rectify this situation; disparities have many roots and are centuries in the making. Dental education and practice, including reimbursement structures and professional development, will also need significant improvements that specifically teach about racial injustice and health effects. The fear is that oral health inequity will continue post-COVID-19 due to dentists working down a backlog of preventive care for those who already have teeth without issues—mainly those who have dental insurance, are financially stable, and, in many cases, are white. Couple this with the fact that due to protocols during the pandemic to keep dental staff and patients safe, more than half of all dental practices are still operating at a lower volume than usual.³⁸ Furthermore, many of the people who need dental care the most were more likely to lose their jobs during the pandemic and therefore may be without the dental coverage they once had. This means less preventive care and management of early disease. The oral health care system will require creative changes to overcome this combination of hurdles. However, Simon reported that dental care is trending back to the same old system of overcaring for those who need care the least and using the same office-based approach that is focused on highly technical invasive care. The creativity may need to come from primary care providers, who will need to evolve to be more active team players in addressing oral health and the disparities that exist in rates of disease and access to prevention and management.

Despite the examples showcased in this chapter, the vast majority of medical offices were not ready for the dental issues that have come during the pandemic. Studies have shown that practicing physicians do not have the knowledge and skill to address emergent oral health issues and have not fully embraced setting up their practices to screen and educate on this topic.³⁹⁻⁴¹ Where does this deficiency stem from? One factor is lack of oral health training in medical schools and residency programs, which we have noted. Even when there is inter-professional education, a meta-analysis shows that dentistry is often not included.⁴² Another factor is the way our system incentivizes care with fee-for-service. In addition, the pandemic showed how little dental and medical practices were prepared to coordinate care even on the most basic level. Dentists in parts of the country offered their medical colleagues PPE;^{43,44} however, there was no plan to resupply dental offices later in the pandemic when dentists returned to work.⁴⁵ This is an example of the lack of coordination needed among all health providers during the pandemic. Furthermore, medical professionals did not coordinate to assist their dental counterparts with COVID-19 testing for high-risk patients and high-risk procedures. If anything, dental facilities stepped up to run some of the COVID-19 testing in parts of the country,⁴⁶ but again as testers and leaders of the care, not as coordinators to bring

the two systems together. Clearly, there is room to work together to avoid redundancies, improve safety, and ensure high-quality care during and after the pandemic.

The future promise and pathway

Primary care can help revolutionize how we decrease oral health disparities in the United States; however, we will need more oral health education in health schools, continuing education, and incentives for medical providers to address dental issues in the office and work closer with their dental colleagues. We don't have to reinvent the wheel, as there are already many evidence-based curricula and practice-based models available.^{27,47-49} Smiles for Life and the American Academy of Pediatrics PACT program are two curricula that have proven success. We know that efforts to integrate oral health into health care education programs in the United States continue through organizations such as Oral Health Nursing Education and Practice and the National Interprofessional Initiative on Oral Health.^{50,51} The Center for Integration of Primary Care and Oral Health has recently initiated an ambitious goal of creating 50 state oral health education champions and engaging every health program in the country to teach oral health through their One Hundred Million Mouths campaign.⁵²

There is a strong need for spreading and scaling up in the clinical setting the *implementation* of the workflow models mentioned earlier. What has been achieved to date is mostly from grant-funded projects, proving that the integration of oral health into primary care with dental collaboration is helpful. The next step is to move beyond grant-funded projects and evolve the medical-dental integration into a normal partnership of how we offer comprehensive health care. This will require proper reimbursement, EHR coordination, and likely training that assumes that medical and dental providers are meant to be teammates, much in the same way that other specialists and providers, from podiatrists to pharmacists, have been part of the teaching of interprofessional education and practice modeling.

The best pathway forward for medical-dental integration in terms of reimbursement includes ACOs and value-based care (VBC). As outlined in other chapters, ACO models and other insurer-based studies in the United States have already shown that medical-dental integration saves money and improves outcomes.⁵³⁻⁵⁵ Disparities have the greatest opportunity in health care to be rooted out when people have access. In VBC and ACOs, the goal is overall wellness, which means preventing disease and promoting wellness so that a patient does not overutilize the health system. This involves providing care where people already tend to visit. Currently, one-third of people in the United States, or approximately 110 million people, do not visit the dentist annually.⁵⁶ This number increases to 45% for the Black and Latino population. Meanwhile, 75% of people identify as having a primary care provider, resulting in 300 million visits a year to primary care offices.^{57,58} If we capitalize on this in an ACO model, we could offer preventive oral care in the medical office. Of course, there are patients who visit the dentist more than they visit their physician, and for that reason we should also explore administering vaccines and blood pressure checks in the dental setting.

Dentistry is likely concerned about PCPs offering oral health care in their offices. Primary care providers will never provide full dental treatments in their office, however, just as they do not

offer full surgical services in their office. Nevertheless, PCPs do offer ways to prevent surgery (e.g., weight loss counseling, joint injections) and offer less-invasive office-based surgery (e.g., mole excision, lipoma removal) when appropriate. The comparison to dental services would be to offer prevention in the form of oral hygiene counseling, oral exams, fluoride varnish, and dental referrals, much like the early adopters are doing. The pandemic has shown that noninvasive oral health services are on the rise and offer legitimate quality dental care. Some are advocating for this as a permanent change.⁵⁹ The future will see an increase in caries treatment with silver diamine fluoride (SDF), a liquid painted onto asymptomatic caries in their early stages to arrest the further development of the caries process.⁶⁰ Training to implement SDF is not challenging, and it has already had limited success in the primary care setting and is being further studied.^{61,62} Other noninvasive dental care techniques such as atraumatic restorative treatments are being encouraged during the pandemic and have been used for years in the United States and globally. This technique avoids the need for local anesthetic and the use of a drill. Again, with proper training, this treatment has been used in primary care settings in other countries and could provide options for certain geographic locations in the United States where access to dentistry is a challenge.^{63,64}

In some settings, models could include even more creative care. A practice change model that has developed over the past few years includes deploying a dental hygienist into the medical setting or a nurse practitioner into the dental setting. This allows for cross-pollination of ideas and care. This is not needed, nor could it practically be implemented, in every medical setting. Some medical and dental practices are already colocated in the same building or quite close to one another. Others are already working together through shared EHRs or coordinated care. Many offices would be too small to generate enough work for this level of care. So, having a dental or medical representative in the office is not practical for all situations. For others, this model can lead to improved care and warm handoffs to the main dental or medical office of the transplanted provider.

In Colorado, dental hygienists are being placed in rural medical settings across the state. This has resulted in a decrease in caries prevalence in the cohort studied.⁶⁵ The Harvard School of Dental Medicine has had success with incorporating a nurse practitioner into the dental setting.⁶⁶ The team has noted addressing more general health issues that were previously being missed. What is needed in many settings are virtual versions of these models, with teledentistry and telemedicine for medical and dental providers, respectively. A synchronous and asynchronous opportunity for consults similar to what the Extension for Community Health Outcomes (ECHO) system does for hepatitis C and other health issues⁶⁷ is a model that might work for smaller offices or rural settings that cannot attract or utilize a full-time advanced practitioner from another discipline.

The important outcome in all of these models is accessibility for all. Since African American and Latino patients, as well as other people who have been marginalized in the dental care system, such as veterans, those with disabilities, and LGBTQ patients, are in their PCP's office more than the dental setting, each person could be getting the preventive management in the setting they are in. There is no reason dental advice and basic care should be contained to the dental setting; this approach is contributing to health inequities. For that matter, we need

to get outside of formal primary care settings as well, following the lead of current models of school health, Head Start, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), as well as care mobiles, all of which are also offering oral health promotion and disease prevention. Delivering health care in diverse settings levels the playing field; people work, they go to school, they go to church—they are busy. Care can be offered in these alternate settings. The key is coordinating what is done so that we avoid overtreatment, overtesting, and complaints from patients and providers about the discoordination of efforts. Of course, setting standards of care is also a prime consideration to ensure safety and high quality.

The National Academy of Medicine, in its document *Integration of Oral Health and Primary Care: Communication, Coordination, and Referral*, stresses the importance of communication through technology.⁶⁸ Sharing an electronic health record is the gold standard and is the pathway to coordinated care that avoids duplication. Companies such as Epic have created the Epic Wisdom module to help medical and dental practitioners work together.⁶⁹ Marshfield Clinic in Wisconsin and eClinicalWorks are expanding their role in this space. They have proven that a shared EHR makes it easier to create referrals and search for patients with certain conditions that make them higher risk for poor dental health, which affects medical outcomes. Physicians can then contact those patients if their dental follow-up has lapsed.⁷⁰ This type of application has the opportunity to improve equity through better reminders and eventually access to dental care. We need to go further to include cloud-based sharing of oral care management to communicate across EHR platforms, health care settings, and nontraditional health settings. Other countries and many states are storing health data within a microchip on a plastic pocket-sized card, on a smart device, or in personalized cloud platforms. Medical record portals are helping with this evolution, but we need to have a portal for all health care, not just hospital-system-based care.

Barriers to transformation

The fear is that we are trending back to old models as the pandemic wears on and we will let this opportunity to improve care, outcomes, and disparities slip away. Telemedicine, for example, has improved access for patients whose lives are more challenging or who lack transportation. I can attest that I have had an easier time having virtual visits with patients who were previously experiencing challenges getting to the office. This included those with dental issues who suffered during the pandemic and could not see a dentist due to limited access. If telemedicine is not continued as a billable service, this will affect equity efforts for all aspects of health access in the primary care setting, including access to acute oral health care. We need to not only preserve telemedicine and teledentistry, but also take it in new directions.

Time and a lack of reimbursement are perennial barriers for many changes in health care. However, immunizations are a great model for quality improvement. They work because they have been folded into office workflow and they are reimbursed. Some practices have used this model to implement fluoride varnish applications for pediatric patients in primary care. States that reimburse PCPs for oral health services such as varnish and risk assessments have been shown to now have children with significantly greater odds of having very good or

excellent teeth compared to states that do not reimburse.⁷¹ Protocols have been designed for improving office workflow for oral health services; we simply need to scale and implement them. Current incentives have engaged the early adopters but are not enough for the bulk of practices. ACOs and VBC models are one answer; quality markers and other reimbursement changes might be another. This type of work also depends on champions. Champions are not born, they are made. This will require investment in leadership from government and non-governmental sources of funding. It will also take creative social marketing; interventions like fluoride varnish will have to be promoted as the “vaccine of the mouth,” for example.

Not all patients facing disparities are seen in their PCP’s office, hence the need for care in the community as well. Just as dental offices need to have more dental care extenders in the community, PCPs also need to work with health care extenders. It is a barrier to expect everyone to come to our offices. Community health workers (CHWs) can do assessments and give advice, school nurses can apply fluoride varnish, and visiting nurses can assure that patients who are homebound are practicing good oral hygiene. We need to change our mindset or risk contributing to the present disparities. The status quo is not a plan nor a solution, as stagnation will also leave many practitioners without patients in their offices as society and health delivery evolves. We have already seen this with urgent care settings drawing patients away. Visits to primary care offices were down 18% before the pandemic.⁷² So extending care beyond our offices is the new reality. Dentists are facing the same challenge, and dental therapists are part of a newer discipline that will allow dentists to achieve this goal if the collaboration is embraced. For primary care, our extension may come through CHWs (who now have a training designated for them on Smiles for Life)⁴⁷ and the use of nurse practitioners and physician assistants, who have seen a 129% increase in visits during the same time that primary care was losing visits.⁷²

Finally, we often lack creativity in the health system. We are hemmed in by embracing the status quo and rules meant to protect the public from unsafe care. We cling to a system that often focuses on profit over care for the vulnerable and an emphasis on avoiding malpractice. All of these factors have merit and lead to stagnation. At the very least we need to make changes to be better prepared to face another pandemic or equivalent. This includes evolving our system so that medical and dental professionals can work together to use the same centralized screening systems for viral testing so that both medical and dental offices can be safe and accessible to patients. We need to have dental offices work with medical offices so they can help patients get emergency access. We need to allow dentists access to medical settings that have negative pressure rooms so that emergent care can be conducted. This takes organization at the state level of professional organizations and an acceptance that the greater good for the public is working together and letting former rules and guidelines be rewritten or relaxed in crisis situations. We saw this creative approach during the pandemic at times (e.g., reimbursing for telemedicine conducted by phone calls) and we will need more of this. After the pandemic will be the time to prepare for the next disaster, not waiting and relearning our lessons again when a new national or global crisis occurs.

However, our evolution of medical-dental integration is not just about preparing for a future crisis like a pandemic. It needs to be about facing the current and long-standing crisis

of health and social inequity. This is our chance to work together to overcome the biggest problem in our country. We have to avoid the urge to compete with one another for providing oral health services and aim to offer appropriate, timely service in the best setting for each patient to maximize outcomes and wellness. There are approximately 150,000 general and pediatric dentists in the United States, while there are approximately 335,000 PCPs (including MDs, DOs, NPs, and PAs, not to mention thousands more CHWs and personnel in schools, Head Start programs, WIC, community centers, and more. Clearly, access to basic oral health services is more practically achieved through care in other settings. The biggest barrier is the limitation of our imagination, morality, and desire for a better system and outcomes that serve all in an equitable manner.

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Telehealth Equity: Before and After COVID-19

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Telehealth during the COVID-19 pandemic has represented an abrupt and rapid transformation of primary care with near- and long-term implications for health equity. When considering telehealth rollout within safety-net health care settings serving diverse patients, there are multiple factors at play: existing challenges at both the clinician/system and patient levels, as well as new opportunities for engagement and proactive planning for sustaining implementation as a core component of care post-pandemic.

Telehealth can refer to a variety of remotely delivered health care, including real-time synchronous health care (e.g., video visits), asynchronous care (e.g., store and forward services like teledermatology), and adjunctive digital tools, such as wearables or remote patient monitoring. Of these domains, prior to COVID-19 there was higher adoption of asynchronous telemedicine—such as teledermatology, telemedicine retinopathy screening, and electronic specialty consultations—in underserved settings to address gaps and delays in access to specialty care. COVID-19, however, ignited unprecedented growth primarily in synchronous, patient-facing telehealth, including both telephone and video visits.¹ We will focus the remainder of this chapter on this synchronous remote clinical care, which we will call telemedicine.

Telemedicine care has been primarily limited to video visits, as audio-only telemedicine had limited or no reimbursement from most payers. Therefore, much of the literature and prior implementation has focused exclusively on video visits. By contrast, many safety-net systems delivering telemedicine care in the initial stages of COVID-19 (and continuing to deliver care) use audio-only telephone visits.^{2,3} While no data exist comparing telephone to video visits directly, prior literature suggests that video interpretation is better than phone interpretation for communication outcomes (satisfaction, comprehension).^{4,5} Therefore, telemedicine equity must also consider variations in

access and quality of care for telephone versus video visits. We will address overall equity considerations for telemedicine in this chapter, including broad telephone or video visit implementation processes as well as more specific digital considerations for use of video calls on smartphones or other devices.

Finally, it is important to note that there has been high satisfaction with telemedicine in systems routinely offering video/phone visits prior to the pandemic, such as Kaiser Permanente Northern California or the Veterans Affairs system.^{6,7} We will expand upon that knowledge but additionally focus on the state of telemedicine for safety-net health care settings such as Federally Qualified Health Centers (FQHCs) and public hospitals that disproportionately serve patients who are low-income or on Medicaid, who are from race/ethnic minority backgrounds, and who have limited English proficiency or communication barriers such as limited literacy.

The impact of telehealth during COVID-19 on primary care access

The building blocks of high-quality primary care include engaged leadership, data-driven improvement, empanelment, prompt access to care, and team-based care.⁸ Prior to COVID-19, there were large inequities in implementation of these building blocks between safety-net settings and health care settings that served higher-income populations. Low-income, immigrant, or chronically ill populations have been more likely to experience barriers to prompt access to primary care.⁹ Efforts to address gaps in access were disrupted by the growth of telemedicine implementation. When the COVID-19 pandemic began, despite the dramatic increase in use of telemedicine for ambulatory care, there was a decrease in overall primary care utilization.¹ This reduction was particularly dramatic in community health centers that cared for many underserved populations.¹⁰ Moreover, at the onset of the COVID-19 pandemic, in practices that switched to telemedicine, patients with known barriers to digital access (older, low-income, limited English proficient, and minority individuals) were particularly less likely to utilize primary care.¹¹

Yet regardless of health care setting, clinical practices are beginning to return to in-person visits, while maintaining a larger presence of telemedicine than they did previously.¹² Therefore, it is crucial that health systems develop standard work for remote ambulatory care that explicitly ensures equitable access to telemedicine. To ensure telemedicine equity, policy makers, health system leaders, and clinicians need an understanding of the state of the digital divide among health systems and patients. It will also be helpful to incorporate lessons learned from efforts to increase electronic health record adoption, the most widespread previous digital disruption in health care.

Barriers to telemedicine for safety-net health care settings

Though most conversations on telehealth equity focus on patient-level barriers, there are disparities in preparedness for and capability of transitioning to telemedicine at multiple levels of the health care system between underresourced health systems, which disproportionately

care for minority and low-income patients, and higher-resourced systems (Table 1). Underresourced health systems have less device, software, and broadband access as well as lower payment rates per care episode, which often results in lower telemedicine payments for practices that disproportionately care for patients with low digital access.

In 2016, only 15% of clinicians worked in practices with telehealth programs, and these were most frequently hospital-based health systems or large practices with at least 50 clinicians.^{13,14} By 2018, fewer than half of community health centers used any form of telehealth, and less than one-third of those using telehealth in those systems were primary care providers.¹⁰ Therefore, safety-net settings (particularly FQHCs) were not prepared to transition to telemedicine. Since many of these centers had not adopted telehealth prior to the pandemic, most did not have hardware (i.e., video-enabled devices) and/or software (video capabilities embedded into the electronic health records and compliant with the Health Insurance Portability and Accountability Act [HIPAA]) to rapidly increase telemedicine services. Since the COVID-19 pandemic began, investment in this infrastructure has been nearly impossible as the reduction of in-person care also meant health centers were suffering daily financial losses.

Reimbursement policies only exacerbate disparities between health systems. Although the Centers for Medicare and Medicaid Services (CMS) quickly made changes to its telemedicine reimbursement policies for Medicare patients, Medicare covers only 18% of the US population.¹⁵ Adoption of telemedicine policies varied across commercial payers, Medicaid, the Veterans Health Administration, and the Indian Health Service (among others).^{16,17} Moreover, initially CMS policy changes did not fully include health care systems that care for larger proportions of indigent patients, such as FQHCs and rural health centers, though a policy change later ameliorated this problem.¹⁸ In addition, although most health centers were able to immediately offer telephone visits (and audio-only visits may have been more accessible for patients with digital access challenges),¹⁹ audio-only telemedicine visits have traditionally been paid for at a much lower rate than video visits.²⁰ Changes to reimbursement for

Table 1. Barriers to Telemedicine Equity in Primary Care

Level	Barriers to Equity
Health care system	Reimbursement policy
Health practice/clinician	Hardware access HIPAA-compliant software High-quality Internet connection Mission and workflow alignment Capacity to provide technical support Staff turnover
Patient	Digital device access High-quality Internet connection Digital literacy

audio-only services only occurred after advocacy by many primary care organizations, and it is unclear how long these policies will remain.

Barriers to telemedicine for diverse patient populations

Multiple trends in digital access influence the ability of patients to use telemedicine services. There are growing rates of smartphone ownership in the United States, with more than 80% of Americans having access to a device and more than 90% of Americans self-reporting using the Internet.^{21,22} Yet, when these data are examined further, there are clear subgroups who still fall behind in device access and home Internet use. Specifically, 71% of low-income Americans (i.e., those making less than \$30,000 per year) own a smartphone and 56% have Internet access at home, compared to 97% and 94%, respectively, of those making \$100,000 or more annually.²³ Similar disparities are present by age groups (i.e., lower use among those 65 years or older versus younger groups) and community (lower use comparing rural versus urban populations).²² Relatedly, there is a new emerging trend that shows a sharp increase in smartphone-only Internet use, particularly among the lowest-income groups in the United States; 26% of Americans making \$30,000 or less per year rely on their smartphones *only* to access online resources and apps or tools.²² This presents unique challenges with respect to lower quality of data service (e.g., cellular coverage with potential data use restrictions versus higher speed and higher bandwidth coverage at home)—especially for services like video visits that can use more data than other tasks.

Beyond device ownership rates and access to high-quality Internet service, there is a third component of the digital divide that requires attention: digital literacy, or the skills to be able to use digital platforms to complete tasks. For example, only 26% of those aged 65 years or older in the United States report being very confident in using digital devices.²⁴ But these differences in digital literacy persist among other groups as well. A recent survey by the San Francisco Digital Equity Initiative found that 92% of San Francisco residents both report home Internet use and basic digital literacy skills to go online, defined as completing basic online searches, sending an email, finding a website, and completing an online form.²⁵ Yet when stratified, only 53% of the lowest-income San Franciscans report both home Internet use and basic digital literacy skills, with similar trends among those with limited English proficiency. Other peer-reviewed research also supports low digital literacy as a fundamental barrier to uptake of digital health services.^{26,27}

Finally, there is a clear literature on the need to preserve patient-clinician relationships regardless of the digital care modality introduced. For example, some patients report preference for in-person visits instead of remote/virtual care, as well as the need to understand how clinicians recommend remote care modalities.²⁸ The trust in telehealth as well as other digital health care services will be linked to supporting ongoing care team relationships. When considering trust at an institutional or structural level, concerns about security and privacy (as well as mistrust in the medical system itself) are prevalent and must be communicated and addressed up front with patients.²⁹

Lessons from previous digital health implementations

Experiences at underresourced health care settings

As we begin to envision how to equitably incorporate telemedicine into primary care, we can look to the experience of electronic health record (EHR) adoption. The Health Information Technology for Economic and Clinical Health Act (HITECH) of 2009 significantly increased adoption of EHRs.^{30,31} Despite efforts to specifically support centers in serving rural or disadvantaged populations, however, practices and systems that served larger Medicaid and low-income populations were less likely to achieve success in EHR implementation or in using advanced EHR tools.^{30,32,33}

HITECH had an incentive structure that was not designed with equity in mind. HITECH incentives to adopt EHRs included performance targets related to patient access to medical records. To reach these targets, safety-net practices often needed substantial resources and personnel to digitally prepare their patients to achieve these targets for patient use of portals tied to EHRs.³⁴ For health systems that served patients with digital barriers, reaping the financial incentives (or benefits) of reaching these performance targets may not have been the best use of their limited resources to meet their patients' needs.³⁴ Subsequent research has found that pay-for-performance programs disproportionately penalize safety-net practices when the performance highly depends on the social and economic circumstances of the patient population.^{35,36}

Disparities in EHR adoption were also influenced by the need for continued support beyond initial investment.^{30,37} Innovations have not generally been designed with safety-net settings in mind, and they require adaptations to meet the needs of such systems. For example, purchasing decisions must consider workflow and workforce concerns in safety-net systems, yet the investment options for digital products and solutions might not be suited to the needs of their patients or clinical team.^{30,38} For example, some systems lack language-concordant patient platforms. While English-only patient-facing tools clearly harm patients, they also impact clinical teams because they require health care teams (which are often understaffed in safety-net systems) to find time to support diverse patients in accessing these digital tools. Since patients with limited English proficiency often receive care in safety-net systems, health care teams in these settings are most impacted by the limited number of digital products designed for diverse populations. Time is also needed to develop the capacity for the specific technical assistance or skills that are needed to fully leverage a new technology.³⁹⁻⁴¹ This capacity building requires resources that may be less readily available in safety-net systems.

Implementation challenges more common to safety-net settings include staff turnover and the need for mission alignment for the organization.^{39,41} Turnover can be particularly challenging when leadership or an innovation champion leaves—stalling progress through loss of knowledge, impact on staff morale, and added burden to remaining staff who may need to recruit, hire, and onboard a new team member. Furthermore, safety-net systems are more likely to implement innovations that have been proven in other similar settings or are a good cultural fit for their populations.³⁷ Thus, specific types of digital innovations that directly

address high-priority challenges in safety-net systems (such as electronic consult services to help improve specialty care access) have been more easily adopted than general solutions common to higher-resourced facilities.^{42,43}

Previous digital health implementation successes among diverse populations

Despite sobering statistics about the fundamental barriers of device ownership, high-quality Internet access, and digital skills, especially for older adults, low-income Americans, and other communities such as those with limited English proficiency, the statistics do not imply that these groups are not interested or able to use digital tools and services like telehealth if adequate and proactive measures are put into place. National surveys suggest that public interest in electronic communication with providers and the ability to access medical records or services online is extremely high.⁴⁴ Further, research in Medicaid populations shows the same rates of high interest in digital health tools, underscoring the demand.⁴⁵ Early research among safety-net populations during the pandemic also shows high levels of interest in telemedicine.⁴⁶

Efforts to introduce patient portals and mobile health applications among diverse populations provide lessons for how to overcome other barriers to patient adoption of digital health in diverse populations. First, the fundamental connectivity and device barriers patients face often require creative solutions outside the health care system. Partnering with community-based organizations already working on digital inclusion strategies (such as by providing access through public libraries) can be a successful approach to overcome gaps in both device access and digital literacy.⁴⁷

Patient portal implementation efforts to enable electronic health record access have shown that robust technical support,³⁴ such as creation of enrollment helplines, weekly training sessions, distribution of educational brochures, or one-on-one support from clinical teams or volunteers, to assist patients is also a crucial element to successful patient adoption. Importantly, this technical support needs to be maintained and cannot be viewed as a one-time investment.^{28,34} Among patients with digital literacy challenges, training may be needed to increase use of digital health tools,^{48,49} and one-time trainings may not be sufficient for all patients. Previous limited success with individual or patient-level interventions to increase patient portal use among diverse populations suggests that a multilevel approach, including incorporating health system changes, collaborating with community-based organizations, or redesigning a digital tool, is needed to increase use of similar digital tools. Strategies such as codeveloping more usable tools with diverse end users, and forming sustainable partnerships between health care and existing community organizations providing linkages to low-cost programs for devices or Internet access, are fruitful opportunities.⁴⁹

Moving forward: Strategies to address equity in telemedicine

Despite the barriers outlined here, clinical and health care sector leaders have never been more engaged to improve telemedicine and rapidly iterate and try telemedicine workflows. The rapid pace of change has impacted all health care systems, and the unique moment of the pandemic has required safety-net systems to embrace telemedicine (at a minimum, phone visits) to deliver primary care safely. The changes induced by COVID-19 present an opportunity to develop and implement an equitable approach to telemedicine that will be sustainable and continued in a future practice state.

We map next steps for various stakeholders to achieve telemedicine equity in Table 2.

Table 2. Strategies to Promote Telemedicine Equity in Primary Care

Group	Recommendations
Policymakers	<p>Incentives for health care systems to purchase infrastructure and develop technical capacity to provide ongoing support.</p> <p>Expansion of free or low-cost digital devices and broadband access.</p>
Health care payers	<p>Flexibility in payment models to provide the type of care (telemedicine video vs. telemedicine phone vs. in-person visit) most appropriate for each patient.</p> <p>Payment for activities (e.g., technology support) and devices (e.g., home monitoring equipment) that support telemedicine care.</p> <p>Payment structure that explicitly considers underserved populations and does not penalize safety-net systems.</p> <p>Requirement of private solutions to meet patients' accessibility needs, particularly with literacy and language.</p>
Health care system operators and clinicians	<p>Collaborate with digital inclusion organizations.</p> <p>Seek guidance and resources on selecting most usable technology platforms.</p> <p>Develop digital training for patients.</p> <p>Screen for digital access barriers.</p> <p>Train team members on providing technology support.</p> <p>Train clinicians and provide resources on how to address communication challenges (e.g., language barriers).</p>
Health services researchers	<p>Evaluate how and when telemedicine advances equity and improves clinical or patient-reported outcomes.</p>

First, there is a clear role for policymakers and health care payers to ensure telemedicine equity.⁵⁰ As the experience of the HITECH Act shows, safety-net systems need additional financial support to acquire digital infrastructure and technical expertise to support ongoing maintenance of digital infrastructure. Furthermore, telemedicine cannot be equitably implemented if payment policies do not support telemedicine access for all patients by paying for multiple visit types at a reasonable level or paying for patient-monitoring tools that allow for safe telemedicine care. These incentives need to be developed so as not to penalize high-need patients or the systems that serve them. Similarly, as many have noted, high-speed Internet and digital access are no longer luxuries. They are crucial elements of life, much like electricity and running water; policies are needed to lower barriers to the Internet and digital devices.

Second, health care systems and clinicians have important roles in addressing many patient-facing barriers to accessing telemedicine. Systems must recognize that many of their patients may have barriers accessing telemedicine and design technical support that meets patient needs. To proactively address these issues, systems can also partner with organizations already conducting digital inclusion work as well as explicitly evaluating core usability principles when selecting and purchasing patient-facing digital tools.⁵¹ Clinical systems should develop workflows to help health care teams screen for and identify barriers, such as device access, home Internet service, and digital literacy. These barriers are likely common and health care teams should have received training and support to provide technical support to patients to engage in telemedicine care. As the patient portal experience shows, health systems should anticipate this technical support will be an ongoing need and should have clear workflows for linking patients to these services. Similarly, health care settings can simplify the patient-facing aspects of the workflow, such as by simplifying log-ins to video visit platforms whenever possible and generating patient-focused, simple instructions to use for the services offered at each clinical site.⁵²

Another clear need to engage patients more meaningfully is a better match of existing technologies to diverse patients' needs. As with all patient-facing resources, platforms need to be designed with accessibility in mind by ensuring usability for limited health literate populations and translation into multiple languages for patients with limited English proficiency—which is not currently the standard in digital health. We can collectively demand this development from the private sector and actively partner with them to ensure diverse perspectives are considered up front.

Our final recommendations are for health service researchers. Since many safety-net systems prioritize mission alignment and are often not early adopters of innovations, health services researchers play a crucial role by evaluating how, when, and if telemedicine can improve equitable care for underserved populations or address other needs in safety-net systems. Without evidence supporting outcomes important in underresourced settings, such as clinical, patient-reported, cost, or clinician outcomes, telemedicine likely will not be made accessible to patients disproportionately served in safety-net settings.

Conclusions

Despite ongoing concerns about equitable access to telemedicine,^{11,53,54} we believe it is important to highlight that telemedicine can be implemented to assist patients with challenges attending in-person care (e.g., mobility issues, distance from a health center, child care/work constraints). Though telemedicine has been implemented in the past year in response to an unanticipated global health pandemic, there has always been a role for telemedicine to help facilitate equitable, patient-centered, high-quality care. By capitalizing on this time of rapid change to design telemedicine for equity using some of the approaches suggested in this chapter, we are hopeful that telemedicine can be leveraged to reduce instead of exacerbate existing health disparities.

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Improving Health Communication for Primary Care Practitioners During and After COVID-19

Ramya Pinnamaneni and K. Viswanath

The role of communication in primary care draws on a “patient-centered communication” framework¹ and is generally discussed in the context of building a relationship that influences the “expression and interpretation” of messages in interpersonal interactions between patients and the health care personnel.² This should, ideally, lead to the building of trust and openness in conversations and disclosures of symptoms and concerns, resulting in easing of anxiety, management of uncertainty, satisfaction with decisions, adherence to recommended actions such as behaviors or medical regimens, and improvement in health outcomes. In short, communication in a primary care setting is not just about an exchange of technical or medical information, but also includes nontechnical dimensions that affect patients’ experiences and the course of the illness.

With COVID-19, some additional concerns crop up. One, standardized and recommended treatments are emerging much later in the course of the pandemic, which means a greater reliance on nonpharmaceutical interventions and management of uncertainty because of the “newness” of the disease. Second, the recent emergence of COVID-19, the evolving science of the disease, and the resulting lack of information are likely to influence public trust and openness in the future. Third, physical distancing and other legally mandated restrictions of movement have impeded the frequency of patient-provider contacts and in-person interpersonal interactions that usually facilitate communications.

Last, it has become clear that underserved groups, such as those from lower socioeconomic position (SEP), people of color, immigrants, those who cannot work remotely, and people in certain neighborhoods that are segregated, suffered disproportionately because of COVID-19.³⁻⁵ As has been repeatedly documented, it is these same groups that have historically suffered disproportionately from disease burden on a range of health conditions.⁶ Interestingly enough, it is also well

documented that these same groups are affected by communication inequalities—differences in access to, processing of, and capacity to act on information—that have been implicated in health inequalities.⁷ That is, the role of class, place, race, and ethnicity has compounded already existing inequalities in COVID-19-related health care including health care communication, though communication may also provide an opening for addressing them more readily than other factors.

This chapter provides an overview of how communication within and outside the primary health care system may influence health care under COVID-19, and what we need to mitigate the current crisis and improve health care in the future. Where appropriate, we draw from a national, probability-based sample survey of 1012 Americans aged 18 years and older, on COVID-19 communication. The survey was administered in July/August 2020 through a panel to 1822 members, with a response completion rate of 55.5%.⁸

Patient-provider interaction and communication during COVID-19

In the constantly evolving information environment about COVID-19, it is vital for health care professionals (HCPs) to keep up-to-date with both the science around SARS-CoV-2 and the public health guidelines. However, no matter how knowledgeable an HCP is, be it a primary care physician, a nurse, or a specialist, their communication with the patient is of utmost importance to determine a patient's adoption of and adherence to preventive health behaviors or medical recommendations, management of emotions, self-management of chronic conditions, and ultimately health outcomes.⁹

Clarity in communication from a physician and expressions of support help in building patients' trust and understanding. Primary care practices have an established rapport with their patients and community. This can result in a beneficial exchange of information to address the concerns and questions of patients, reconcile conflicting messages, and facilitate adherence to public health recommendations during the COVID-19 pandemic. The provider-patient trust also helps improve the disclosure of symptoms, thus improving contact tracing and limiting the spread of COVID-19. In the absence of validated and standardized treatments, this is extremely important. During these times of fear and anxiety, primary care physicians may also focus on keeping the essential services and their practice open (virtually or in-person) while adhering to all safety standards and ensuring that the patients feel safe and heard.

Keeping up-to-date

The newness of the SARS-CoV-2 virus and its infection has led to an immense amount of research to gain more clarity about its spread, treatment, and prevention. Within eight months of discovery, even a rudimentary search with the term "COVID-19" on PubMed yielded close to 70,000 papers. A number of papers and preprints have been published and some have been retracted. Many of the research papers have been contradictory. Systematic reviews have been slow to come out and authors are recognizing the shortcomings of the reviews, especially

concerning rigor and timeliness. In such a situation, how can individual primary care physicians keep themselves updated?

The same question may be raised about the patients. The sheer flood of information across communication platforms, including health care settings as well as news media and social media, has resulted in a confused and bewildered audience that has expressed a sense of information fatigue and avoidance. In a recent nationally representative survey we conducted, about 25% of the sample of 1012 respondents reported avoiding COVID-19 information. Of these 25% of respondents, 40% reported being “overwhelmed by all the COVID-19 information” and around 40% felt that the “information kept changing anyways.”

Addressing misinformation

COVID-19 is the first pandemic in the social media era. Almost half of the world population, about 3.5 billion people, in theory, are online with about one-third of them on social media.¹⁰ Growth in this arena has been rapid. For example, in 2005, just 5% of American adults used at least one social media platform. By 2011, that share had risen to half of all Americans, and today 72% of the American public uses some type of social media.¹¹ While social media is being used to keep people safe, informed, productive, and connected, at the same time, the technology is enabling and amplifying an “infodemic” that continues to undermine the global response and jeopardizes measures to control the pandemic. According to the World Health Organization (WHO), an infodemic is an overabundance of information, both online and offline. It includes deliberate attempts to disseminate wrong information to undermine the public health response and advance the alternative agendas of groups or individuals.¹²

Misinformation is a phenomenon of both social media and traditional media. The coverage of COVID-19 in traditional media outlets has largely amplified the unscientific voices of leaders across political spectra who have advocated for unproven cures, proposed conspiracy theories to explain the origins of the coronavirus, and have undermined the impacts of the nonpharmaceutical public health interventions.

Misinformation about treatments for COVID-19 can prompt people to try cures that can harm them, while fears and distrust about a possible vaccine could undermine vaccine uptake. False information can also lead to a decreased observance of preventive strategies such as hand-washing, distancing, mask wearing, and lockdowns, causing substantive threats to public health globally. It is important to address misinformation at all levels: individual, community, national, and global.

In a recent nationally representative survey we conducted, close to 80% of 1012 respondents were misinformed on some aspect of COVID-19, with most of the confusion being around how COVID-19 is transmitted. The science of transmission has been evolving over time and it is understandable that there is confusion, but more importantly, the survey underscored that people are likely to look to their HCPs for guidance and information on such topics. Patients and families may expect that primary care settings should be a reliable source of information.

HCPs have long served a learned intermediary function for patients. But the speed at which misinformation can spread through today’s digital media ecosystem can overwhelm any

information gatekeeping, especially during public health emergencies such as a pandemic. Physicians working individually cannot tackle the totality of misinformation about SARS-CoV-2, either in the exam room or online. Their time with patients is limited, and few physicians have social media followings that rival those of celebrities, politicians, and citizen journalists. It is difficult for physicians and primary care practitioners to chase every bit of misinformation out there and then try to refute it.

However, the good news is that public confidence and trust in physicians remain fairly high.¹³ Primary care practitioners are the first contact point for the general public for health information. Given their credibility, it is critical that they do not sit on the sidelines and that they actively and aggressively intervene whenever it is warranted. Physician organizations can provide critical support as gatekeepers and as arbiters of fact and evidence-based information. This practice has a long history. In 1849, for example, in an effort to curb quack remedies, the American Medical Association (AMA) established a board to enlighten the public in regard to the nature and danger of such remedies.¹⁴

Individual physicians can help counteract misinformation about SARS-CoV-2 by refuting misinformation without drawing more attention to it. The empirical evidence on how to effectively counteract misleading facts is mixed. In general, it is recognized that rebuttals of misleading information are more effective when they do not repeat the false information.¹⁵ Physicians may also embrace their role with journalists. Physicians as a group have high credibility and are often a primary source of health news for health journalists.¹⁶ Journalists are critical gatekeepers and can influence the availability of information in the media through this gatekeeping function.

Even if individual physicians do not have a huge media following, they have the ability to leverage the power of institutions because of their credibility over nonscientific people in the media.

Risk communication and management of uncertainty

When communicating health and science information to patients and their communities, it is important that health care providers inform them about risk and how various actions or inactions either mitigate or increase their risk. Covello defines risk communication as the “process of exchanging information among interested parties about the nature, magnitude, significance, or control of a risk.”¹⁷ By definition, risk is the probability of occurrence of an event or threat and involves uncertainty, and communication about risk is intended to help manage uncertainty through actions. Health care providers routinely deal with communication of risks drawing from genetic, family, lifestyle, and societal backgrounds of patients and draw on guidelines to recommend actions. Patient reception to risk messages is driven by a number of factors such as how they perceive risk, including perceived susceptibility and perceived severity.¹⁸ Perceived susceptibility is the feeling of personal vulnerability to the threat, while severity deals with the extent to which the patient feels that the consequences of the threat are severe.

One can easily glean the challenge in applying this to the context of COVID-19-related communication in primary health care. Although our understanding of the pathogen and the health consequences are better understood now, emerging infectious disease by definition carries a lot of uncertainty, and the COVID-19 pandemic in the early months was no exception. All aspects of the disease—including how one contracts the pathogen, symptoms, treatments, and potential health consequences—were unclear to start with, which created fraught conditions within the primary health care context. Standard diagnostic tools such as testing were difficult to access, which compounded the problem. The dependence on nonpharmaceutical interventions such as face coverings, hygiene, and physical distancing became paramount, making communication and persuasion more critical. Few tools to aid in communication and decision-making were available to primary health care providers, which magnified the problem of uncertainty.

As the scientific community gained further understanding of the pathogen and the ways in which the disease spread and as the standards for treatment grew, one might speculate that communication within the primary care setting might have also improved. What is yet to be tested is the extent to which the larger mis/disinformation environment outside the clinical settings has affected the interactions between providers and patients and the implications for health outcomes.

Patient-centered communication in the context of COVID-19

Many physicians face challenges in communicating with patients about serious illnesses. Although many residents and medical students receive training in evidence-based methods of communicating with patients with serious illness to support shared decision-making, a crisis such as the COVID-19 pandemic entails a shift in focus from individual values to population-based resource allocation in order to maximize the care delivered to the population as a whole.¹⁹

Although the core communication skills of rapport building, assessing the patient's and family's perspectives, responding empathically, giving information, facilitating understanding, and participating in shared decision-making by including the patient and family continue to be fundamental to effective communication through the course of this pandemic,²⁰ health care workers have had to adapt. The modified "goals of care" and "breaking bad news" discussions with patients and their families need to factor in the changed COVID-19 circumstances, such as virtual encounters, explaining triaging of scarce resources, virtually connecting family and dying patients, and dealing with grief and isolation. Although these communication challenges seem trivial from a distance, they are taking a toll on the well-being of the health care workers. The stress and emotional toll associated with such interactions are only now being explored, and few health care providers were prepared for such discussions with patients and their families.²¹

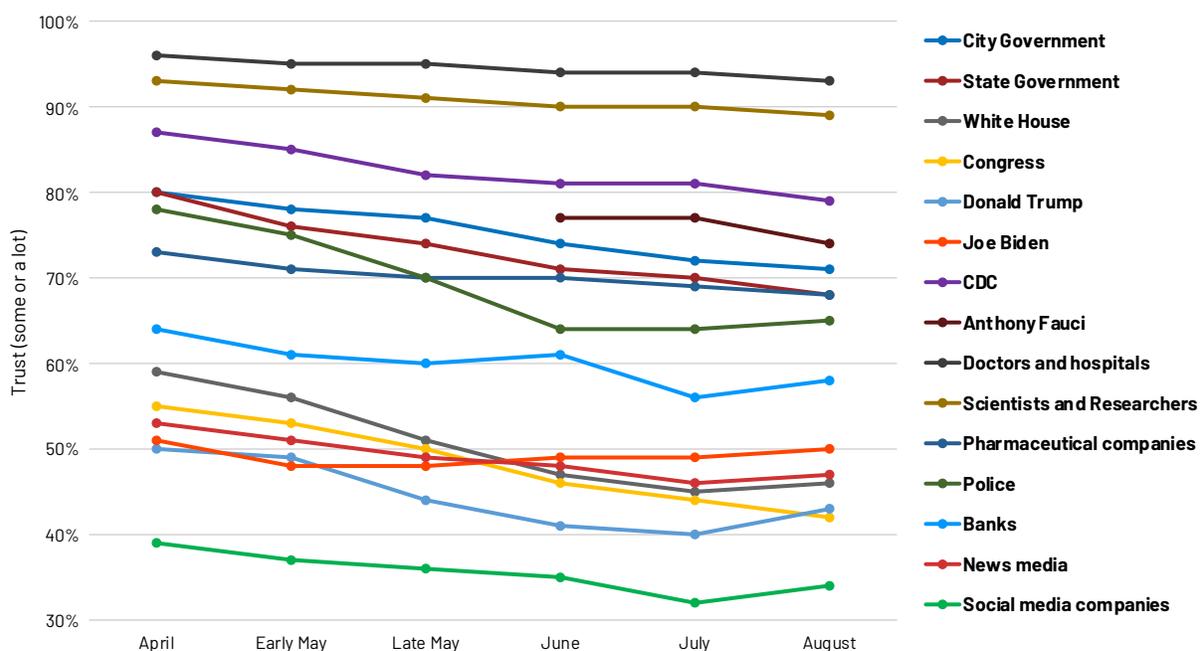
Impact on trust, engagement, and mutual respect

One of the most important roles of the primary care physician network is to serve as trusted sources of health information for the community. According to a survey of 21,196 individuals conducted in August 2020 to study the levels of trust in people and organizations “to do the right thing to handle the COVID-19 outbreak,” doctors, hospitals, scientists, researchers, and the Centers for Disease Control and Prevention (CDC) ranked high compared to other groups (Figure 1).¹² Despite the waning amount of trust in each institution, doctors and hospitals still remain the most trusted sources. Other surveys similarly demonstrated that the public has the highest trust in physicians or doctors.²²

Now that the COVID-19 vaccines are available, trust in health care providers becomes even more critical given the general mistrust of vaccines among the American public. For example, according to a survey by the Pew Research Center, the proportion of Americans who responded that they will “definitely” get the vaccine decreased from 72% in May 2020 to 51% in September 2020, thereby raising serious questions about any chances of herd immunity.²³ On the other hand, childhood immunization remains high, and trust in pediatricians is often the principal driver of immunization.

At least two factors may influence the issue of trust in HCPs in the near future. The high degree of politicization of all things COVID-19 may affect any preventive actions people may accept and abide with. For example, the same Pew study also shows that respondents who identify with the Republican Party are much less likely to get the vaccines than those who identify with the Democratic Party. A second factor is that since in-person interactions are impeded by physical distancing and other legally mandated restrictions of movement, maintaining trust and continued engagement could remain a challenge.

Figure 1. Trust in Institutions and Leaders to Manage the COVID-19 Crisis, April to August 2020.¹²



Issues of equity

The recognition that COVID-19 led to differential impact in morbidity and mortality among different people was slow to dawn on our collective psyche. Early on, documentation of disease spread was limited and data on how it impacted different groups were sparse or nonexistent. This is the classic problem of data absenteeism, in which data on some groups, especially the underserved and racial and ethnic minorities, are not available or are sparse, leading to poorer understanding and poorer delineation of how some groups are adversely affected as well as the conditions and consequences of the adversity.²⁴ It took several months after the start of the pandemic to realize that communities with higher proportions of racial or ethnic minorities, immigrants, higher levels of poverty, and people with daily wage occupations were suffering disproportionately more than others, leading to literally deadly consequences among those groups.^{3,5} This phenomenon of differential impact, disparities in health and well-being, is a continuation of a long history of suffering of underserved groups. The reasons, well documented through copious investigations in health, social epidemiology, and social and behavioral sciences, include risk factors, disease conditions, and health outcomes that are affected by factors such as economic disruptions,²⁵ neighborhoods with limited services and poor conditions, access to health care services, education and literacy, low income, and racism, among many others.⁶ All of these factors contributed to the disparities observed during the COVID-19 pandemic.

Another phenomenon that received only passing and selective attention is that of communication inequalities. A significant component of communication inequalities is access to health care information in parallel to health care services. In the context of COVID-19 these inequities might manifest in two ways: knowledge about the disease and access to telehealth services.

Research has identified that in times of significant flows of information, especially in science and health, people from higher SEPs benefit more compared to those from lower SEP groups, leading to knowledge gaps between the two.^{26,27} Given the complexity and the continuing change in our understanding of the science of COVID-19, one can hypothesize increasing knowledge gaps among different social groups. This might manifest in the form of both “correct” knowledge as well as misinformation about disease etiology and preventive measures to avoid contracting the disease. For example, in our recent survey on the role of communication during COVID-19, we found that misinformation on transmission was more likely to be believed than conspiracy theories. However, the fact that at least 20% of the 1012 respondents questioned the value of face masks in preventing COVID-19 suggests that misinformation persists among some groups.

Some have suggested that health literacy, especially among patients, is important for better health outcomes. The WHO defines health literacy as the ability of individuals to “gain access to, understand and use information in ways which promote and maintain good health” for themselves, their families, and their communities.²⁸ Poor health literacy is associated with poor education and low SEP,²⁹ and given the novelty of COVID-19, this may adversely affect health outcomes in vulnerable groups until they have learned about the disease, how it affects them, and how it can be prevented.

In this phase of complex and inconsistent information overload, conflicting messages and scientific research are being disseminated directly to the public with limited gatekeeping, causing the public to get overwhelmed by technical details. This in turn can lead to anxiety and fear of the unknown. Health care providers can mitigate this by addressing patient and community concerns and questions and mitigating suspicion and mistrust.

In parallel with the issue of access to health care information lies the issue of access to services. In the current COVID-19 crisis, access to primary care was affected by job losses or temporary furloughs, disruption in transit services on which the poor usually rely, and loss of insurance coverage, among others. Given the restrictions on physical movement, telehealth has been proposed and used as a promising solution to promote access. Telehealth increases convenience for both the physician and the patient while decreasing the risk of exposure to COVID-19.

But telehealth also has limitations, including the potential to exacerbate health disparities.³⁰ Patients face three overlapping barriers to accessing telehealth: the absence of technology, digital literacy, and reliable Internet coverage. Together, these barriers make up the digital divide, which disproportionately affects older people of color and those with low socioeconomic status.³¹ Older and Black patients are much less likely to use their patient portal sites, where patients and physicians can communicate, than younger and white patients.³² This is especially more problematic in areas and communities where physicians are shutting down outpatient clinics and delivering care exclusively through phones and computers.

Post-COVID-19 future

Where do we go from here? There is no question that the novel SARS-CoV-2 and consequently COVID-19 have disrupted our lives in ways that one could not have imagined previously. Along with almost every social institution, primary care has been severely disrupted even while the burden to address the disease and expectations have increased multifold. Globally, primary care is the first point of contact between the community and the health system, and as such, it has been at the forefront of COVID-19 care and prevention. As COVID-19 becomes part of the “new normal,” primary care health care providers will be expected to address a range of health care problems caused not just by COVID-19 but also other routine missed services. Amidst several factors that take disease control out of the primary care setting, communication with patients and families will be central to managing health care.

As of now, there are few empirical studies that actually document how patient-centered communications in primary care health settings have been affected by COVID-19, and it will have to become a high priority for future work. A few areas where communications will be critical are described here.

First, communication and negotiations on such critical and delicate issues as triaging of patients and resource reallocation—including chronic disease management, screenings, and immunizations—as well as treatment decisions and delivery of bad news, which have always been difficult, will be much more so post-COVID-19.

While keeping track of the research, treatment, and vaccines, it is also crucial for physicians to be aware of the epidemiological trends in the spread of the novel SARS-CoV-2 virus and the hotspots in their coverage area. By staying informed, physicians can prepare for an outbreak, take up surveillance, and disseminate mitigation measures. The physicians should adequately communicate the resources and preparedness plans with the staff and the community. Following the COVID-19 resource centers and guidelines or bulletins issued by the WHO, the CDC, physician organizations such as the AMA and the American Academy of Family Physicians, the primary care practice, and the local city and state public health departments could be helpful.

The unusual politicization of COVID-19 means that there will be continued resistance among certain pockets of citizenry to medically and scientifically informed recommendations. One of the most potentially politically fraught subjects will be that of COVID-19 vaccine uptake. Preparing the public for COVID-19 vaccinations, building up vaccine confidence, and improving vaccine uptake will remain a time-consuming challenge for health care providers.

Telehealth is likely to become more appealing and may very well grow as a critical platform for health care delivery. Leaving aside infrastructural and economic problems that need to be addressed, how telehealth will affect patient-provider interactions and implications for health outcomes will have to be a focus of empirical work.

Considerations of future physician trainings in some selected areas will have to take into account severe illness communication and end-of-life communication in resident trainings, with assessments. While COVID-19 is raging, online communication skills instruction and workplace learning for residents and trainee physicians become vitally important.

An issue that deals less with patients but is critical within the primary care setting is the well-being of health care workers who have had to face the brunt of managing the pandemic on the front lines with inadequate safeguards, protections, and information. How these conversations are opened, managed, and resolved will become a critical area to investigate.

Last, equity or the lack of it will remain *a* if not *the* central issue. COVID-19 has taught us once more that existing disparities, if not addressed with urgency, will compound, leading to needless deaths and suffering. That this has even become an issue speaks to the collective failure of the system, requiring urgent answers.

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Undocumented Immigrants in the United States in the Time of COVID-19

Kathleen R. Page

The COVID-19 epidemic in the United States has disrupted both preventive and therapeutic care for many people in the country. While health plans and practitioners increasingly focused on maintaining the health of existing primary care patients at a time when in-person visits were mostly canceled, the health care needs of undocumented immigrants—many of whom lacked insurance or a relationship to a medical home, and had chronic conditions such as diabetes mellitus—were largely overlooked. As the COVID-19 epidemic expanded throughout the country, undocumented immigrants became increasingly at risk for delays in routine health care, infection with COVID-19, and poor access to COVID-19 testing and treatment.

As the epidemic unfolded, it became increasingly evident that undocumented immigrants were at heightened and disproportionate risk for morbidity and mortality from COVID-19. The disproportionate impact of the disease on this community was caused by multiple factors, among them occupational exposures, marginalization, poverty, and systematic exclusion from safety-net benefits, including health care. The epidemic highlighted key challenges to care for undocumented immigrants—the digital divide, language barriers, immigration fears, and lack of familiarity navigating the health care system—that exacerbated preexisting health disparities between undocumented immigrants and more privileged populations in the United States.

The epidemic also highlighted the profound individual, societal, and public health cost of systematically excluding populations from the safety net, while presenting unique opportunities to expand access to primary care for all, including for undocumented immigrants. Addressing the challenges to care for undocumented immigrants through innovations in how primary care is delivered, including through modification and tailoring of academic-community partnerships and telemedicine solutions, can enhance primary care access in underserved areas and for people with

limited English proficiency, ensuring flexibility of service at lower cost while addressing the digital divide. In this chapter, we review health care access barriers facing undocumented immigrants, particularly highlighting issues of insurance coverage and primary care delivery strategies, key initiatives to improve access and delivery, and how COVID-19 has shined light on areas to focus our attention to improve primary care outcomes among undocumented immigrants in the United States.

Undocumented immigrants and access to care

There are an estimated 10.2 million undocumented immigrants in the United States, a decline from a peak of 12.2 million in 2007.¹ The majority, 8.1 million, are from Latin America (65% from Mexico and Central America), and 1.45 million (13.8%) are from Asia.² Over the past two decades, the undocumented immigrant population has matured; 66% have lived in the United States for more than a decade, and it is estimated that 5.1 million children, the majority US-born (79%), live with an undocumented immigrant parent in the United States.³ Nearly half of undocumented immigrants live in New York, California, and Texas, but there has been increasing dispersion, with “emergent” communities appearing throughout the country.⁴ Capacity to provide culturally and linguistically appropriate services is often limited in emergent Latino communities, and has been particularly strained during the COVID-19 pandemic.

Both the changes in the numbers of undocumented immigrants and their areas of residence within the United States affect access to and delivery of health care. The decline in temporary and rise in permanent migration, in part driven by enhanced border enforcement that makes it difficult for migrants to travel back and forth from their country of origin, means that many undocumented migrants are laying down roots, establishing families, and aging in the United States. Almost three-quarters of undocumented immigrants are younger than 45 years of age, but the proportion of older adults is growing and it is estimated that 1.3 million undocumented immigrants are over 55 years of age.⁵ In addition, despite high participation in the labor force, undocumented immigrants suffer significant structural and social disadvantages that can affect health care access and delivery. Almost half do not speak English, half do not have a high school degree, and more than half live below the 200% poverty level.⁵ The rapid growth of the undocumented immigrant population in areas of the country with limited infrastructure and capacity to provide linguistically and culturally appropriate services can also limit access to care.

Health policy exclusions

We argue that a barrier to health care for undocumented immigrants is their systematic exclusion from safety-net programs. The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) passed in 1996 dramatically altered social benefit programs and excluded undocumented immigrants from receiving benefits other than public health or emergency health services required by the 1986 Emergency Medical Treatment and Labor Act (EMTALA).^{6,7} As a result, many immigrants avoid medical care unless absolutely essential to avoid high out-of-pocket costs.

The Affordable Care Act

Until the full implementation of the Affordable Care Act (ACA) in 2014, lack of health insurance was common among both US citizens and noncitizens. The ACA almost halved the number of uninsured adults, from more than 46 million in 2010 to less than 27 million in 2016, though these gains have started to reverse in recent years, and coverage varies by state depending on the degree to which the state decided to expand Medicaid to low-income households.⁸ The ACA also enhanced coverage for some immigrants.⁹ Refugees, asylees, and legal permanent residents, for example, were permitted to enroll in the ACA, and those who met income eligibility criteria could be covered through Medicaid or the Children's Health Insurance Program (CHIP).⁸ Legal permanent residents, however, had a five-year waiting period prior to eligibility, although some states waived the waiting period for pregnant women and children.^{8,10} Immigrants with Temporary Protected Status (TPS)—granted to approximately 317,000 individuals from designated countries where armed conflict, environmental disasters, and other situations prevent safe return—could purchase insurance through the ACA marketplaces but were not eligible for Medicaid/CHIP coverage.^{8,11}

By contrast, undocumented immigrants have not been eligible for coverage under Medicaid/CHIP or able to purchase health insurance through the ACA marketplaces. Recipients of Deferred Action for Childhood Arrivals (DACA), which provides temporary work permits and protection from deportation to immigrants who arrived in the United States before their 16th birthday, have likewise been excluded from the ACA marketplaces, Medicaid, and CHIP.^{10,12} As of March 2020, there were 643,540 DACA recipients, all of them under 40 years of age (as only people under the age of 31 years by June 15, 2012, could apply).¹³

ACA exclusions have inevitably widened disparities in health care coverage. Undocumented immigrant adults are nine times more likely to be uninsured than US citizens and almost twice as likely to lack health care coverage as legal permanent residents.⁸ The disparity between undocumented immigrants and others living in the United States is also evident among undocumented children, who are eight times more likely to be uninsured than children who are US citizens.⁸ Low-income adults and children are most likely to be left out of health care coverage. It is estimated that 45% of undocumented immigrants lack health care insurance.⁸ Although some immigrants have limited access to employer-sponsored coverage or may be able to purchase private insurance, these options are typically limited to higher-income earners or those working in companies that offer employer-sponsored insurance.

Employer-based coverage

Even prior to the ACA, gaps in health care coverage between undocumented immigrants and US citizens could be largely explained by variability in employer-based coverage and the type of occupations performed by low-income undocumented immigrants.¹⁴ Approximately 7.8 million undocumented immigrants participate in the US labor force, and the vast majority of undocumented immigrants (over 80%) live in families with at least one full-time worker.¹⁵ Despite high employment rates, 60% of undocumented immigrants have incomes below the 200% federal poverty level.⁵ This is largely explained by their disproportionate representation

in low-wage occupations in the service industry, agricultural workforce, and construction sectors.⁵ Many undocumented immigrants work in the informal and unregulated sector as “jornaleros,” day laborers or migrant farmworkers, performing dangerous jobs with few protections, low wages, employer abuse, wage theft, and limited options for recourse.¹⁶ Even those working in regular occupations face discrimination and unsafe working conditions, but rarely report violations of employment law due to concerns about immigration repercussions, language barriers, and limited knowledge of worker protection laws. These conditions contribute to exploitation and make access to employer-based health care coverage an exception rather than the rule.

Health coverage at the local level

Some states and local jurisdictions have established special programs to provide health care coverage for undocumented immigrants. For example, California, Illinois, Massachusetts, New York, Oregon, Washington, and the District of Columbia use state or district funds to provide health care coverage for all income-eligible children, regardless of immigration status.¹⁰ In 2019, Mayor Bill de Blasio of New York City announced a program expected to spend \$100 million annually to offer health care coverage to all low-income New York City residents, including undocumented immigrants. California’s state government announced a plan to offer health care coverage to an estimated 90,000 low-income undocumented adults up to the age of 25.^{17,18} New York, California, Massachusetts, and Washington, DC, have also extended Medicaid/CHIP coverage to DACA recipients.^{10,12}

Health system barriers

Despite recent initiatives, almost half of undocumented immigrants remain uninsured. Uninsured undocumented immigrants primarily rely on Federally Qualified Health Centers (FQHC) or community clinics for primary care, public health clinics for specific services, or emergency departments for urgent care needs. In the United States, there are 1,362 registered FQHCs operating almost 12,000 service delivery sites.¹⁹ These sites provide sliding-scale payment options for low-income individuals and provide services regardless of immigration status. Unfortunately, the demand for primary care sites exceeds the supply, with regional variations in the degree of demand-supply mismatch. Urban areas have a higher concentration of FQHCs, and there is significant state-to-state variability in FQHC access, quality, and outcomes, with general improvements in access, quality, and outcome indicators among states that expanded Medicaid following the ACA.¹⁹⁻²²

Beyond health care insurance, key features of health care systems can present barriers to accessible primary care for undocumented immigrants. Access to language services or bilingual providers for patients with limited English proficiency (LEP) can be a significant challenge for undocumented immigrants at these and other health care sites, especially in “emerging” destinations where such immigrants have not traditionally resided. In a recent survey, fewer than 50% of LEP Spanish-speaking callers in emerging destinations were able to make an appointment at an FQHC, compared to more than 80% among English speakers.²³ In addition to language barriers, lack of familiarity with the system can make it difficult to navigate.

Perceptions of health and disease may prioritize seeking care for acute conditions rather than seeking preventive care. Practical considerations such as lack of transportation, conflict with work hours, and difficulty finding child care can also limit access to care. Institutional racism, discrimination, and cultural insensitivity can dissuade immigrants from seeking care.²⁴

Anti-immigrant policy and access to health care

Explicit anti-immigrant policies and rhetoric in the political sphere can have a further “chilling effect” on health care utilization.²⁵ Perceived or real fear of deportation when interacting with governmental agencies and health care institutions has led to reduced uptake of safety-net services, even among people who are eligible for such services. After implementation of the ACA, for example, eligible individuals living in mixed-status families (where some relatives are undocumented) in nonexpansion Medicaid states had the lowest health insurance uptake.²⁶ Similarly low insurance uptake was observed among US-born children with immigrant parents. Heightened immigration enforcement has been associated with lower Medicaid participation among citizen children with noncitizen parents, who are twice as likely to be uninsured compared to children with citizen parents.^{8,27} Conversely, protection from deportation can have a “warming effect,” as is evident in the higher participation in the Women, Infants, and Children (WIC) program among citizen children of DACA-eligible mothers.²⁸

Disincentives to receive care have been particularly acute during COVID-19 due to the Inadmissibility on Public Charge Grounds,²⁹ which went into effect on February 24, 2020, as the COVID-19 epidemic began. Since the 1800s, US immigration law has restricted admission of individuals unable to care for themselves without becoming public charges, and the 1996 Personal Responsibility and Work Opportunity Reconciliation Act states that immigrants must be self-sufficient. The 2020 public charge rule, however, provides specific guidance on implementation, indicating that participation in a broad array of social service programs can be used as evidence against applications to become a permanent resident of the United States. In particular, the rule change in 2020 added the use of Medicaid coverage for non-pregnant adults and certain nutrition and housing programs to the list of programs that could be used to deny a permanent residency application. Although the rule applies primarily to permanent resident applicants, a path not readily available to most undocumented immigrants, it caused ripple effects throughout immigrant communities. Findings from a national survey of community health centers revealed that as the public charge rule circulated through the court system,³⁰ many immigrants (including a broader group than those targeted by the rule) did not enroll in Medicaid even if eligible. Clinics also reported that patients were hesitant about disclosing personal information, delayed their engagement with prenatal care, and feared that services beyond those included in the rule would be affected, such as WIC and school lunch programs. In the 2018 nationally representative Well-Being and Basic Needs Survey, 20.7% of adults in low-income immigrant families reported reduced participation in noncash public benefit programs for fear of disqualification from eventually obtaining permanent residency status.³¹ There are an estimated 8.3 million children with at least one non-citizen parent enrolled in Medicaid/CHIP or receiving SNAP benefits who could be at risk of losing benefits.^{30,32}

The perfect storm: Limited access to care, undocumented status, and COVID-19

Although having health insurance does not guarantee that people will have a medical home, there is strong evidence that having insurance greatly facilitates access to primary care. Uninsured children, for example, are much less likely to have a usual source of care or to have seen a provider in the last year and are more likely to forgo needed medical or dental care.³³ Models estimate that lack of insurance explains 25%–40% of disparities in preventive care between non-elderly adults with incomes below the 400% federal poverty level and those with higher incomes.³⁴ Following ACA implementation, an analysis of a nationally representative sample of non-elderly adult patients receiving care at community health centers found that those without insurance were more likely to live under 200% of the federal poverty level, be foreign-born, have limited English proficiency, be Latino, and be less likely to receive necessary medical care, including preventive care and follow-up for abnormal cancer screening tests.³⁵ Early detection of cancer, heart disease, diabetes, and other chronic conditions can promote healthier lifestyles and better disease management. Although proving that health insurance saves lives has been difficult, in part because death is a rare outcome in non-elderly adults, evidence from quasi-experimental studies confirms lower use of preventive services among the uninsured and trends toward lower survival for select conditions.³⁶

National data on COVID-19 mortality and insurance status or access to primary care has not been published (and may not be readily available), but the experience of clinicians caring for COVID-19 patients strongly suggests that health insurance and primary care were important contributors to racial/ethnic disparities in COVID-19 outcomes, including mortality. As has been widely reported, African Americans and Latinos have borne a disproportionate burden of COVID-19 incidence and mortality. Among Latinos, the rate of COVID-19 is more than three times higher than in non-Hispanic whites, and the age-adjusted hospitalization rate more than four times higher (160.7 vs. 40.1 per 100,000).³⁷ The disparities have been particularly stark among younger individuals. For example, 34.9% of Latino individuals who died of COVID-19 were less than 65 years of age, compared to 13.2% of non-Hispanic whites.³⁸ Almost half (44.6%) of COVID-19 patients less than 21 years of age have been Latino.³⁹

Access to health care and health insurance impacted when and how undocumented immigrants presented to care during the COVID-19 epidemic. Patients without health insurance or primary care providers delayed access to care until they became severely ill.⁴⁰ Fear of high medical bills, lack of familiarity with the health system, institutional mistrust, and concern about the public charge rule dissuaded many from seeking care unless severely ill. In a multistate survey of 350 individuals diagnosed with SARS-CoV-2, Latinos were more than twice as likely as whites to have been admitted to the hospital with severe COVID-19.⁴¹ Among 326 patients admitted with COVID-19 to Massachusetts General Hospital between March 14 and April 20, 2020, Spanish-speaking Latino patients were more likely to have more severe disease on chest imaging associated with delayed presentation to care.⁴²

Lack of health insurance may also have exacerbated the risk of severe COVID-19 from untreated underlying conditions commonly addressed in the primary care setting. The

prevalence of diabetes mellitus, for example, is higher among Latinos than among most other race/ethnic groups in the United States.⁴³ Undiagnosed diabetes is also more prevalent among Latinos than non-Latinos, especially among individuals from Mexico and Central America.⁴² Undocumented immigrants with diabetes are less likely to have seen a health care provider in the last six months or ever compared to documented immigrants.⁴⁴ Clinical experience suggests that COVID-19 unmasked previously undiagnosed diabetes among many undocumented patients without a medical home. The Johns Hopkins Health System, for example, partnered with community clinics to ensure continued diabetes care among Spanish-speaking patients newly diagnosed with diabetes during their admission for COVID-19.

Though Latino populations have been disproportionately represented in terms of COVID-19 infections, the overall statistic of Latino prevalence does not provide sufficient granularity to fully understand the drivers of these disparities. The Latino population in the United States, for example, is highly heterogeneous: 67% are US born and 79% are US citizens, but foreign-born Latinos have lower socioeconomic/educational attainment and access to health care.^{8,40} These factors heavily impacted the risk of COVID-19 infection among some Latinos. Although systematic data collection is missing, clinical experience as well as review of the lay press demonstrate the particularly high toll of COVID-19 among undocumented immigrants.⁴⁰ At the Johns Hopkins Health System, for example, almost 70% of Latino patients admitted to the hospital had limited English proficiency, and between March 11 and May 25, 2020, the SARS-CoV-2 positivity rate among Latinos was 42.6% compared to 17.6% and 8.8% among non-Hispanic Black and white patients, respectively.⁴⁶ Community testing at a high-density foreign-born Latino neighborhood from June to October 2020 showed persistent disparities (SARS-CoV-2 positivity rate of 33% among Latinos compared to 3% for whites), and higher likelihood of having limited English proficiency among Latinos with a positive test. In this setting, 75% of Latino patients diagnosed with COVID-19 had no primary care provider. Serologic studies in other areas of the country are also finding evidence of high rates of infection in areas with large foreign-born Latino populations.⁴⁷⁻⁴⁹ Data on non-Latino undocumented immigrants is lacking altogether. This data gap is worrisome and the risk of COVID-19 among non-Latino undocumented immigrants may not be easily discernible in aggregate statistics by race/ethnicity due to relatively low representation at a population level.

The high infection rates observed among undocumented immigrants is fundamentally rooted in the systematic exclusion from benefits, political disempowerment, and systemic racism that perpetuate poverty among undocumented immigrants despite their high employment rates. As the COVID-19 epidemic accelerated in the United States and unemployment levels rose precipitously, the Coronavirus Aid, Relief, and Economic Security (CARES) Act extended unemployment relief to contractors and other workers not ordinarily eligible, and a \$1,200 stimulus check was sent to individuals with a social security number who met income eligibility.^{50,51} Undocumented immigrants, however, were ineligible for either of these benefits and the stimulus check was withheld from any individual living with undocumented family members. Low-income Latinos were heavily impacted by the economic downturn related to COVID-19; approximately 60% lived in households that experienced job losses or pay cuts, and 70% had no emergency funds to cover three months of living expenses.⁵² Undocumented immigrants often support more than one family and have remittance obligations, and those

living in states without access to driver's licenses face additional obstacles to opening banking and savings accounts.⁵³

The pressure to generate income was so acute that undocumented immigrants continued to work even in the peak of the pandemic, often without adequate occupational protections, and with limited options to demand their rights. The fear of losing a job dissuaded those with symptoms from seeking care unless extremely ill, placing coworkers at risk, especially in spaces where distancing was not possible or where transportation to and from work was shared, as happened in the meat and poultry industry.^{54,55} In addition, crowded living conditions, common among immigrants who have to share rent for affordable housing, fueled ongoing transmission in households where isolation was simply not feasible.⁴¹ For further discussion on the health challenges faced by migrant workers, see the chapter titled *Migrant Worker Health and Health Care in COVID-19*.

Opportunities and challenges

The devastating impact of COVID-19 among undocumented immigrants should galvanize society and the health system to capitalize on new opportunities to promote health equity and expand access to primary care. The impact on undocumented immigrants was tragic at an individual and community level, but it has broader implications and ripple effects for public health and the economy at large. Ignoring the deep problems revealed by the disproportionate impact of COVID-19 on undocumented immigrants will continue to impact society as a whole.

Linkage to primary care

An obvious first step is to facilitate access to COVID-19 testing, follow-up, and linkage to primary care to address underlying chronic conditions and potential long-term COVID-19 complications. At the Johns Hopkins Health System, for example, several partnerships were formed to facilitate access to care and promote continuity of care for undocumented immigrants. Early in the epidemic, Johns Hopkins partnered with a trusted community organization with extensive experience serving undocumented immigrants to establish a COVID-19 hotline. Patients meeting COVID-19 testing criteria were referred to Johns Hopkins for testing, with telemedicine follow-up for those patients testing positive but not having a primary care provider. Johns Hopkins partnered with community-based clinics to facilitate warm transfer of patients from the COVID-19 provider to a primary care provider, and reserved primary care at hospital-based primary care clinics for the subset of patients who had complex medical conditions requiring care coordination among multiple specialties. The Johns Hopkins After Care Clinic provided an additional resource to ensure timely follow-up for patients discharged with COVID-19 from the emergency department, until the transition to primary care was established.⁵⁶

The transition to primary care practices relied heavily on a charity program, The Access Partnership (TAP), a charity program established by Johns Hopkins in 2009 to provide access to effective, compassionate, evidence-based primary and specialty care for uninsured and underinsured residents in the hospitals' catchment area.⁵⁷⁻⁵⁹ TAP's long-standing agreement

with community-based clinics facilitated access to specialty care for uninsured patients, free of charge, at Johns Hopkins. Bilingual and bicultural TAP patient navigators collaborated closely with medical teams and social workers to coordinate care. The TAP workflow relied heavily on existing and mutually beneficial partnerships between Johns Hopkins and community clinics, including FQHCs. In the TAP model, limited capacity in hospital-based primary care clinics was reserved for complex cases, but specialty care was facilitated for patients from partnering community clinics. For basic primary care needs, patients were linked to community clinics that can best serve their needs. TAP's patient-centered approach prioritized patient convenience (e.g., clinic location and proximity) and other social determinants. For example, patients with housing instability, substance use disorder, limited English proficiency, and/or immigration-related concerns were preferentially linked to clinics with expertise and resources to address these issues.

Having existing programs and community relationships with clinics that serve undocumented immigrants was critical to the success of the TAP initiative during a time of crisis, and these relationships should be strengthened for the long run. The electronic medical record, for example, could be used to alert care teams that a patient does not have a primary care home, triggering multidisciplinary collaboration, including social work, to facilitate access. Implementation and systems innovations from other chronic conditions can be adapted to monitor outcomes. The HIV continuum of care cascade, for example, which tracks patient engagement steps from HIV diagnosis to virologic suppression, could be applied to track progress in primary care engagement, especially for patients with underlying chronic conditions.⁶⁰ Given the risk of severe COVID-19 in patients with diabetes, COVID-19 testing could be paired with point-of-care hemoglobin A1C measurements (for the diagnosis and evaluation of diabetes glycemic control) to prioritize rapid linkage to care for patients diagnosed with diabetes and out of care. An approach emphasizing follow-through would monitor patient attendance to the primary care home and, ultimately, disease outcome metrics such as glycemic control.

Telemedicine to improve access

The rapid increase in utilization of telemedicine services during COVID-19 presents another opportunity to enhance access to primary care for undocumented immigrants. While over-reliance on telemedicine could exacerbate health disparities among patients with limited technology literacy or access to Internet, computers, and phones, when used appropriately, telemedicine can be an important adjunct and facilitate patient engagement and care. For example, telemedicine can provide added flexibility for patients without transportation or for patients living far from primary care sites or in remote areas. For patients with inflexible work schedules or child care responsibilities, the option to call into a visit may be more convenient and reduce time and opportunity costs of an in-person visit. Seasonal workers and migrant laborers could also benefit if able to maintain continuity of care with one provider using telemedicine as they move for work.

Telemedicine could also increase access to provider-patient language-congruent care. While language access services are essential to the care of patients with limited English proficiency, it is well documented that having a language-congruent provider improves patient

communication, satisfaction, patient-centeredness, and trust in the provider.⁶¹⁻⁶³ Emergent cities with rapidly growing immigrant populations often struggle to scale up bilingual and bicultural capacity in the service sector to meet increasing demands. Telemedicine makes it possible to leverage existing capacity in other regions with more established immigrant populations, and could be useful for scarce services that are difficult to provide through third-party translation. Mental and behavioral health, for example, are best provided by linguistically and culturally congruent providers who understand the cultural nuances and perspectives of mental health across diverse populations. Undocumented immigrants are at high risk of exposure to traumatic events, whether in their country of origin, during the migration journey, or on arrival to the United States. Discrimination, stress, economic insecurity, and the impact of COVID-19, among other factors, can exacerbate depressive and stress-related conditions.⁶⁴ Access to mental health services is notoriously limited for uninsured patients with limited English proficiency. Telemedicine could help address some of these challenges. A small pilot program offering telemedicine cognitive behavioral therapy to Latina adolescents suffering from post-traumatic stress disorder revealed high engagement, and parents of the patients reported fewer logistic barriers to care, including fewer transportation, child care, and work schedule conflicts.⁶⁵

There are barriers to telehealth that predominantly impact the lowest-income and most vulnerable patients, which must be overcome for a telemedicine approach to primary care access to be successful for undocumented immigrants. Many in this cohort have low educational attainment, so telemedicine resources need to be adapted to the appropriate literacy and technology level, and they must accommodate limited data plans and service interruptions. Nonetheless, cell phone ownership is high even among low-income immigrants, including those without documentation.^{66,67} Small studies of culturally and linguistically adapted apps have demonstrated feasibility and acceptability of telemedicine to immigrant populations.⁶⁸ For example, a randomized controlled study of a culturally adapted web-based Spanish-language app for patients with substance use disorder had very high completion rates (98% in the intervention group) and achieved reduced substance use prevalence among those exposed to the app.⁶⁹ The transition to telemedicine during COVID-19 could enhance uptake of such interventions, when appropriately tailored to the target patient populations.

At the Johns Hopkins Health System, uptake of the electronic medical record MyChart extension (providing access to health records and an electronic communication portal for provider messaging) was low among patients with limited English proficiency prior to COVID-19, but uptake increased significantly, even among LEP patients, during the pandemic, as patients valued quick access to their COVID-19 test results. Community health workers were instrumental in developing videos to demonstrate the steps of MyChart enrollment (including how to set up an email account), and system-level changes were made through Epic health care software to facilitate uptake by removing, for example, the need to be preregistered in the health system by scheduling staff.

The power of community health workers

The community health worker (CHW, or *promotor/a* in Spanish) model is an evidence-based solution that has been successfully implemented to improve the management of chronic diseases and should be expanded to facilitate access and retention in primary care.^{70,71} CHWs are trusted members of the community who build individual and community health capacity through outreach, education, advocacy, linkage to care, psychosocial support, and counseling. They are particularly effective because they have firsthand understanding of the communities they serve and can act as cultural ambassadors, mediating between the health system and patients. They typically have extensive community networks that can be leveraged for disseminating health information, dispelling myths and misinformation, or addressing stigma. They are also well positioned to elicit community feedback, identify priority problems, and explore solutions proposed by impacted communities, which can help develop more practical and culturally sensitive interventions.

CHWs have been instrumental in the COVID-19 response, acting as contact tracers and helping patients navigate the complex and fragmented US health care system. At the New York-Presbyterian Hospital, for example, CHWs performed more than 9,600 wellness checks and helped bridge the digital divide by enrolling more than 3,400 patients in online patient portals.⁷² Bilingual and bicultural CHWs provided critical support to undocumented patients, referring them to resources available outside the federally funded safety-net programs. At Johns Hopkins, a small team of CHWs supported the emergency department and community testing sites by calling all Spanish-speaking LEP patients with their COVID-19 results, providing educational information, and linking patients with positive tests to resources to facilitate isolation (such as food distribution, isolation hotels, and cash assistance). During flu season, they are collaborating with the health department to promote flu vaccine uptake and access.

The CHW approach can also be leveraged to engage undocumented immigrants in primary care. CHWs can emphasize the importance of primary and preventive care. This is important as in many cultures and countries, health care is primarily available or perceived as episodic and associated with acute health conditions. CHWs can begin to educate the community about the benefits of preventive care and highlight the general benefits of health care engagement by referring patients to services that address other priorities, such as financial assistance programs for health care, housing, employment, food assistance, and other social determinants of health. As trusted advisors, they can also dispel fears related to immigration and potential interactions with the health system, and help provide warm handoffs to primary care clinics.

Leveraging multistakeholder partnerships

COVID-19 accelerated nontraditional public-private-academic partnerships, including among institutions that were previously competing for financial and personnel resources. At a national and local level, as various stakeholders collaborated to expand testing capacity, develop COVID-19 therapeutics and vaccines, and operationalize high-volume delivery of care, productive partnerships emerged across health care systems, health technology companies, and

community service providers. In Baltimore, for example, a public-private partnership was established under the leadership of the chief executive officers (CEOs) of CareFirst BlueCross BlueShield, Johns Hopkins Health System, and the University of Maryland Medical System, the mayor of Baltimore, and Maryland state representatives to address the disproportionate impact of COVID-19 on high-poverty areas. Productive partnerships should be sustained beyond the pandemic to improve equity in our health system and expand access to primary care for undocumented immigrants and other vulnerable groups. The same urgency to address COVID-19 that catalyzed these collaborations, broke silos, and brought complementary strengths to the table should be applied to addressing other chronic medical conditions that disproportionately impact underserved communities, such as substance use disorder, diabetes, cardiovascular disease, and obesity.

The electronic medical record—in particular, regional health information exchange (HIE) programs such as the Chesapeake Regional Information System (CRISP) in Maryland⁷³—could facilitate care coordination and help identify vulnerable patients without a medical home. For example, analysis of data in the CRISP HIE has been applied to ascertain fragmentations in care among patients with substance use disorder and to develop predictive models of fatal overdoses.^{74,75} A similar approach could be used to develop predictive models to (1) prioritize patients in need for primary care based on hospital utilization and/or underlying conditions, (2) identify populations or neighborhoods for targeted interventions, and (3) monitor outcome measures. Public health institutions and policy leaders can play a role in this space by establishing health equity metrics and providing financial incentives for population health and community health outcomes.

Conclusions

The COVID-19 pandemic has led to changes at an unprecedented pace in health care delivery. It has also highlighted major deficiencies in our health care system that need urgent attention. For undocumented immigrants, exclusion from health insurance programs resulted in limited access to primary care and created significant barriers to testing and care as the epidemic unfolded. Language barriers, competing priorities, institutional mistrust, the digital divide, and lack of familiarity with the health care system further complicated the timely implementation of strategies to reduce the burden of COVID-19 in this population. But the COVID-19 crisis should not go to waste. There are practical approaches that could help mitigate the impact of the disease and, importantly, expand access to primary care for undocumented immigrants. Lessons learned from COVID-19 present a unique opportunity for transformational change. First, the community health care workforce should be expanded. CHW-based outreach is evidence based and cost effective, particularly in resource-limited settings. Second, the digital divide can be mitigated by expanding access to the Internet, capitalizing on existing platforms popular among immigrants, disseminating culturally and linguistically appropriate health information, and using hybrid models with CHW support. Third, public-private-academic partnerships should be leveraged to expand access to care at the most appropriate setting and establish systems to identify and facilitate linkages to care. Investments now will pay off in lives saved, long-term cost savings, and gains in public health.

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Migrant Worker Health and Health Care in COVID-19

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Migrant workers are one of the most vulnerable and marginalized populations in the United States because of considerable threats to their well-being and systemic and structural barriers to health. A migrant worker is considered an individual whose “principal employment is seasonal agriculture and who travels and lives in temporary housing.”¹ For centuries, systems of oppression and slavery in the United States have perpetuated exploitative working conditions and cheap labor that have contributed to the disenfranchisement of migrant worker populations. Additionally, constantly evolving and destabilized economic systems and governments in regions such as Latin and Central America, as well as the Caribbean, have forced millions of individuals to seek refuge in the United States.² These unstable conditions have contributed to a steep rise in US migrant worker populations and immigration over decades.^{3,4} For many migrant workers, the decision to plunge into an uncertain foreign workforce is often done in the face of staggering poverty, work scarcity, and violence in their native country. It is worth noting that although a majority of the modern migrant workforce in the United States comes from immigrant backgrounds, these deeply entrenched systems of injustice affect all migrant workers regardless of immigration status. To date, the US agriculture industry relies heavily on the labor of more than 2.5 million migrant workers, both documented and undocumented.⁵

The current COVID-19 crisis has uprooted and disrupted the American economy, forcing millions of workers to shelter at home in order to curtail rates of transmission. Despite the threat of a novel pathogenic agent, the agriculture industry has maintained workers on the front lines of America’s farms and meat-processing plants to sustain the nation’s food supply.⁶ Farmworkers, as well as meatpacking workers, have been ubiquitously labeled “essential” as a consequence of their direct role in the food production chain. However, in this situation, the workers’ essential status has failed to protect them from the spread of COVID-19 infection. The nature of migrant labor and the

working conditions on the fields and in plants make it virtually impossible for workers to adhere to national COVID-19 preventive guidelines to keep themselves and their families safe. As vaccines for COVID-19 roll out, some states, such as Florida, have not seen their essential worker status as a reason to provide early access to vaccinations.⁷

Often migrant workers are exposed to hazardous and exploitative working conditions. To reach the work site, farmworkers must travel shoulder to shoulder in enclosed and crowded buses. Once on the job site, laborers work under strenuous physical and psychological conditions.⁸ Migrant workers often live in crowded or congregate spaces found in substandard and decrepit conditions.⁹ Additionally, migrant workers face language barriers, long working hours, and an extensive history of government mistrust, all of which directly hinders many from equitably accessing health care services and social support resources.¹⁰

Such socioeconomic conditions have led to a higher prevalence of noncommunicable and chronic diseases such as hypertension, diabetes, and heart disease among migrant worker populations. These poor baseline health outcomes compounded with emerging COVID-19 challenges have amplified the existence of systemic and social barriers to health in this population, rendering the migrant farmworker especially vulnerable to COVID-19 infection.

This chapter critically discusses the pervasive health disparities that exist in migrant farmworker populations with an emphasis on how COVID-19 has exacerbated existing vulnerabilities and affected access to health care services in this population. To fully explore the plight of migrant farmworkers, a key part in this analysis first looks at the centuries of systemic and structural abuse faced by agricultural laborers in America. Doing so will delineate the long history of pervasive neglect of immigrant and migrant worker populations that has resulted in generations of grinding poverty and declining health outcomes.

With an understanding of the historical and structural context of agricultural and migrant workers, this chapter will then delve into the complexities of migrant farmworker health and health outcomes. Due to strenuous physical farm labor and substandard living conditions, migrant farmworkers bear a greater burden of illness, including chronic conditions, occupational injuries and sickness, and risk of infection. Most recently, COVID-19 infection has poignantly amplified existing vulnerabilities to illness, structural barriers to health, and social inequities. In spite of this, migrant farmworkers were pushed to the front lines of the pandemic without the adequate knowledge, resources, and support to ensure their health. The declining health of essential migrant farmworkers has broad-reaching economic, social, and community health consequences. Thus, it is paramount that we meet existing structural and systemic disparities; seek best health care practices to relieve the disproportionate burden of disease; and mitigate generations of entrenched legal and economic marginalization and abuse that plague migrant farmworker populations in the United States.

History of migrant workers and agricultural labor in the United States

To understand the structural vulnerability of migrant farmworkers to illness, it is essential to understand the systems and legislation that have contributed to their disenfranchisement. A historical exploration of agricultural labor in the United States reveals that social determinants such as poverty and lack of political voice, which hinder the health and health care outcomes of migrant farmworkers, are not randomly distributed but structured into the political, economic, and social fabrics of the nation.

The exploitation that is ubiquitous in the agricultural industry of the American South dates back to the system of chattel slavery. After the end of the Civil War in 1865, slavery in the fields was not eliminated but took on new forms through debt bondage and convict labor. Soon after the passage of the Thirteenth Amendment, former slaves were coerced by poverty and lack of political power to enter into systems of sharecropping, where landowners allowed agricultural workers to plant on their properties in exchange for a share of the profit.¹¹ However, high interest rates, unpredictable harvest seasons, and dishonest landowners led debts to increase each year. This prevented workers from gaining independence or accumulating wealth.¹²⁻¹⁴ Additionally, landowners worked with prison officials to implement debt bondage, where individuals who were convicted of crimes, felonies, and misdemeanors and were unable to pay fines could “bind out” to work for farmers. As employers added costs for food, shelter, and other living expenses, the laborer’s debt increased, cementing the reality of generational exploitation and poverty.¹⁵

Meanwhile, as the South perpetuated systems of slavery to obtain its workforce, landowners in the West relied on immigrant labor to implement large-scale farming. After the Mexican-American War in 1848, California saw an influx of Mexican immigrants, who provided cheap and seasonal labor. This population was followed by Chinese immigrants after the opening of the transcontinental railroad in 1869, until the passage of legislation limiting Chinese immigration at the end of the century. Mexican immigration increased again with the Bracero Program in 1942, which brought millions of temporary Mexican workers to the United States in response to labor shortages caused by World War II.^{12,16} Although the demographic landscape of the agricultural workforce fluctuated, the workers’ shared willingness, bred by poverty and inequity, to labor in uncertain conditions for low wages made them attractive employees to farm owners.

Similarly, in the South, the ethnic and racial identity of farmworkers shifted as African Americans left agriculture for other industries but were replaced by groups of laborers that would also confront brutal conditions and low wages. Throughout the 1970s to 1990s, Haitians arrived first in the South to escape oppressive conditions during the dictatorships of the Duvaliers.¹⁷ They were followed by Guatemalans, many of whom were seeking refuge from the Guatemalan Civil War, and Mexicans, whose ability to make competitive wages through farming had been hampered by the North American Free Trade Agreement (NAFTA).^{18,19} Thus, although many of these individuals arrived in the United States with hopes of a better life, they were instead met with difficult working conditions that perpetuated historical systems of

slavery and exploitation. It is important to note that the disruptions experienced in the home countries were often a result of US foreign policies and practices that manipulated foreign governments, often to benefit US business interests.²⁰

In the 20th century, the marginalization of farmworkers was further codified through the establishment of exclusionary legislation. In the wake of the Great Depression, Congress passed two major pieces of legislation that sought to protect the rights of workers. First, the National Labor Relations Act (NLRA) of 1935 guaranteed employees the right to organize into trade unions, take collective action such as strike, and engage in collective bargaining.²¹ Second, the Fair Labor Standards Act (FLSA) of 1938 introduced the federal regulation of wages and hours by establishing a minimum wage and overtime compensation.²² However, lawmakers excluded agricultural laborers and domestic workers from the protections afforded by the NLRA through the act's definition of employee, which stated it "shall not include any individual employed as an agricultural laborer." The FLSA furthered its discriminatory treatment by excluding agricultural laborers from its coverage and by expanding the definition of agriculture to include more jobs (horticulture, for example). Although legislators later added a minimum wage for agricultural work to the FLSA in 1966, the FLSA continues to exclude agricultural laborers from its overtime protections, and it retains its broader definition of agriculture, which now also applies to the NLRA. Additionally, enforcement of the minimal FLSA protection that does exist for farmworkers remains a challenge due to many factors, including that farmworkers are increasingly employed by subcontracted "farm labor contractors" whose legal distance from the farm itself fosters increased levels of violating employees' rights, and that most employers choose not to use formal timekeeping systems in an industry that is heavily dependent on an itinerant workforce and changes in weather and season.¹²

Today, it is estimated that 50% to 70% of migrant farmworkers are undocumented immigrants, which puts workers at risk of wage theft, physical and sexual abuse, and unsafe working conditions and prevents many individuals from issuing complaints for fear of retaliation.²³ Furthermore, many undocumented workers are excluded from social services such as food stamps and government-subsidized housing. Thus, active efforts to dismantle legalization processes for immigrants serve to further oppress this group of essential workers.

The H-2A visa program, which is reminiscent of the earlier Bracero Program, constitutes one effort to facilitate the legal movement of migrant farmworkers. H-2A farmworkers, who are issued a visa to work temporarily in the United States, make up 10% of crop farmworkers in the country.²⁴ Over the past decade, the number of H-2A workers has been growing steadily.²⁵ However, investigators have found that the program is still rife with human rights abuses that routinely expose workers to human trafficking, debt servitude, and forced labor, to name a few.²⁶

The American agricultural industry is built on systems of slavery, racism, and exploitation; thus, active efforts on the part of workers, agribusinesses, consumers, and corporations are necessary to alleviate centuries of injustice. Although this structural context contributes to the socioeconomic challenges facing agricultural workers, they are often excluded from common benefits such as health insurance, disability insurance, paid leave, and retirement benefits, and many lack access to social services. Thus, when farmworkers become sick, the consequences can be devastating.

Baseline health challenges in migrant worker populations

Today, migrant worker populations face staggering socioeconomic challenges, which have important implications for their health and produce disproportionate structural vulnerability to illness. They represent a highly impoverished and underserved community, resulting from low wages without overtime pay, lack of benefits, employment instability, and stagnation of earnings, which have failed to grow in tandem with the agricultural sector. Indeed, according to the most recent National Agricultural Workers Survey (NAWS), 33% of migrant farmworkers live below the federal poverty line, almost double the national average.²⁷ As a result, these populations demonstrate especially high prevalence of food insecurity and hunger—as much as 50% more than the general US population living below the poverty line.²⁸ Food insecurity and under/malnutrition have long been associated with poor health outcomes and increased risk for development of noncommunicable diseases like diabetes, hypertension, and heart disease.

At home, migrant workers often face substandard living conditions with crowded housing, lack of utilities or few utilities split among many tenants, and, in rural areas, poor access to public transportation, grocery stores, clinics or hospitals, and other services important to wellness.²⁹ One study of North Carolina migrant labor camps found that “crowding, lack of access to sufficient bathing facilities, pest infestation, and structural damage are common to dwellings in farmworker labor camps.”³⁰ Although all migrant workers face barriers, escape from, or improvement of, such living conditions can be especially challenging for undocumented migrant workers, whose inability to apply for subsidized public housing and reliance on migrant worker housing allows owners to charge exorbitant rent. These living conditions, in turn, render migrant workers especially vulnerable to infectious diseases like tuberculosis, hepatitis, and most recently COVID-19.³¹

The physical and psychological occupational hazards faced by migrant workers while on the job are numerous. They typically work long hours performing dangerous and physically laborious work, all while beset by perilous environmental conditions including harsh sun, heat, and dust. They are at risk of myriad occupational injuries ranging from crush injuries to falls.²⁹ In spite of this, less than half have workers’ compensation. Additionally, as a result of inhalation of organic and inorganic particles, as well as the various chemicals used on crops, they are at higher risk of pulmonary diseases like asthma, chronic obstructive pulmonary disease, and hypersensitivity pneumonitis.³² Beyond the immediate danger of acute organophosphate poisoning, long-term exposure to pesticides has been associated with neurotoxicity, multiple cancers, and higher incidence of birth defects.³³ Experiences of workplace abuse, including verbal and physical violence, are disturbingly common. In the most extreme cases, migrant workers are victim to human trafficking and forced labor.³⁴

In spite of structural vulnerability to poor health and working conditions that routinely lend themselves to both illness and injury, migrant worker populations have limited access to health care. Per the most recent NAWS, 53% of farmworkers have no health insurance.²⁷ Very few employers provide health insurance benefits to migrant workers, and undocumented workers do not qualify for government programs like Medicaid or CHIP. The majority of health care for migrant workers is delivered through Federally Qualified Health Centers

(FQHCs), where there is a shortage of primary care providers and access to specialists is limited. Difficulty of access is further compounded by language barriers, lack of transportation, long working hours, no sick leave, and unavailability or expense of child care to attend appointments. As a result of these multiple barriers, migrant farmworkers have very low rates of health care utilization.³⁵

Without regular quality health care maintenance, “silent” but significant health conditions like hypertension, hyperlipidemia, and diabetes go undiagnosed and untreated. Although there is a lack of data, studies suggest rates of chronic illness are persistently high for migrant workers. For example, the California Agricultural Workers Health Survey found that half of all surveyed workers carried at least one diagnosis of either hypertension, hyperlipidemia, or obesity.³⁶ These illnesses place migrant workers, who are already more likely to contract infections, at higher risk of severe COVID-19 disease and mortality.³⁷

Emerging health challenges during COVID-19

The long-standing marginalization and systemic oppression of migrant workers has created health inequities that have been further amplified during the COVID-19 pandemic. Although agricultural laborers are the source of the nation’s food, placing them arguably among the country’s most essential workers, the conditions in which they live and work put them particularly at risk during the pandemic.

Substandard living conditions and occupational hazards lead to increased susceptibility to chronic and noncommunicable diseases. This puts migrant workers at greater risk of poor COVID-19 outcomes. Despite this increased danger, the nature of agricultural work often places migrant workers in situations that hinder preventive measures. The overcrowded trailers in which farmers live, as well as the enclosed buses that take them to work, make social distancing, a measure known to decrease transmission, virtually impossible.

Another key component of the COVID-19 response is testing, but migrant workers are often excluded from testing services for structural and social reasons. A lack of transportation to and from testing centers and a shortage of culturally and linguistically appropriate materials about testing opportunities prevent many migrant workers from accessing testing at all. Those who do have access are often discouraged from seeking out the service because of stigma at work, fear of losing employment, and other severe financial repercussions if they test positive. For instance, some employers require two negative tests before allowing a worker with a former positive test to return to employment. However, due to laboratory delays in returning results and the risk of false positive results that are detecting inactive parts of the virus, this requirement can take weeks to achieve, which puts workers at risk of losing significant portions of their incomes if they test positive once (regardless of symptoms).³⁸

When farmworkers test positive or are exposed to a person infected with COVID-19, becoming cases and contacts, they are advised to isolate and quarantine, respectively. Public health experts advise that these individuals follow several guidelines to protect their health and prevent transmission to others, including instructions to stay home; avoid contact with

others; sleep in a separate room and use a different bathroom from other household members; regularly disinfect household surfaces; avoid sharing household items; and seek medical care when needed.³⁷ For migrant workers, however, these recommendations are often impossible to follow. The need to put food on the table and pay exorbitant rent makes missing two weeks of work financially devastating. Those who can afford to stay home often share close, confined spaces with up to a dozen strangers and may lack access to disinfectants, creating ideal conditions for household transmission. As described previously, many migrant farmworkers are uninsured or underinsured, which leads to challenges in accessing and receiving quality health care.

Finally, contact tracing is an essential tool to slow the spread of COVID-19. This strategy requires positive cases to answer phone calls, often from local health departments, share information about their close contacts, quarantine, and closely monitor symptoms. However, a history of exploitation and fear of the US health system has made some workers hesitant to answer calls from state officials. Thus, culturally humble navigators with rich community expertise and local rapport, such as community health workers, are necessary to gather this sensitive information and connect individuals to local social and clinical resources. In turn, it can make isolation and quarantine a feasible option for migrant workers and help prevent further transmission.

Under the recent public charge rule, immigrants are disincentivized from accessing health care services out of fear of deportation or future repercussions, a fear that has manifested in low-utilization rates of medical services in this population, especially during COVID-19.^{39,40} This is a visceral reality for many migrant workers since a large percentage are from immigrant backgrounds. When the long-standing marginalization of migrant workers is taken into account, it becomes clear that health inequities have been structured into the working and living conditions of this population for centuries. The COVID-19 pandemic has only served to further amplify these disparities, as migrant workers are more likely to become infected and to suffer poor health outcomes from COVID-19. Thus, it is essential to understand how strategies can be tailored to protect and promote the health of this underserved and vulnerable population in order to advance health care as a human right.

Establishing and enforcing migrant workers' right to health

As the preceding section demonstrates, farmworkers are not afforded the same safety nets as other employees in the United States. Farmworkers are an essential part of the food production system, harvesting the fruits and vegetables millions of American citizens rely on to stay healthy. In spite of their essential role in America's farms, farmworkers do not receive adequate support to safely do their job, especially in the face of a novel public health threat. Simple public health messages are not enough to mitigate the effects of COVID-19 on migrant worker populations. Systematic and comprehensive reform is necessary to address the health disparities that plague migrant worker populations, and to reduce the high risk of COVID-19 infection. Farmworkers are vital frontline workers, and vital to their job are the protective resources, paid leave, and targeted outreach that enable them to work safely.

To address this situation, we have identified four main types of solutions: (1) expand health care options in general and during COVID-19 specifically; (2) expand social supports in general and particularly during COVID-19; (3) mandate best practices in workplace safety; and (4) legislate the broader changes that are both necessary and possible.

Expand public health and health care options in general and during COVID-19 specifically

Expanding general health care services to migrant worker populations needs to be a priority in order to foster greater community resilience in times of crisis and address underlying health issues endemic to farmworker communities. As illustrated in the overview of migrant workers' living and working conditions as well as the history of exclusionary legislation, migrant workers' lack of access to health care is woven into American legislation and public policy, and it has produced generations of health disparities. To cultivate an equitable food production system in the United States, these frontline workers require comprehensive and accessible community health care services and protective legislation.

In California, for example, the Clinica de la Raza is dedicated to serving the underserved, including low-income residents, immigrants both documented and undocumented, and historically marginalized groups. The clinic offers multilingual, accessible health care services and a range of available specialties, as well as community health education and social support resources.⁴⁴ Community health clinics such as this can mobilize local resources in farmworker communities to offer the necessary health care and specialized services that are often too far to reach, expensive, or simply closed by the end of the working day. Access to free, rapid, and reliable COVID-19 testing, along with easy access to retesting if a negative test is needed to return to work, is a tangible goal that could be prioritized during the pandemic. New models for primary care delivery, such as mobile services and after-hours telemedicine with technologically accessible options, will help to meet the needs of previously unreachable migrant populations. Effective contact tracing programs that reach all cases and their contacts are another critical tool for combating the COVID-19 pandemic, but too few contact tracers in the United States reach migrant populations effectively; this can be improved if funding is allocated specifically for reaching this group and more contact tracers are hired from the affected communities. Finally, vaccines for COVID-19 should be available to migrant workers early in light of the disproportionate burden of disease in this population, and additional efforts will need to be made to connect with those eligible to assist them in learning about, scheduling, and receiving the vaccine. Online scheduling portals in English have too often systematically excluded migrant workers from getting in line, but these additional outreach efforts can be effective if implemented correctly.

Expand social supports in general and particularly during COVID-19

Social safety nets and support systems must ensure that social determinants of health in migrant worker populations are actively targeted and improved. Often, migrant workers face language barriers that prevent them from accessing health care and receiving accurate

medical information. The inclusion of culturally appropriate education and linguistically accessible information will have far-reaching benefits for migrant worker health and health care access. To best deliver this life-saving information, health systems can employ and deploy community health workers with rich community ties and extensive local knowledge on common practices and behaviors.⁴² Such workers can be a powerful cadre of health professionals that can help expand access to health care and health information during COVID-19.

Access to information, however, does not guarantee that migrant workers will be able to follow good public health advice, because their choices are often constrained by their vulnerable societal position. The ability to self-isolate and quarantine is a key example, since many migrant workers live in crowded conditions and/or multigenerational homes. Programs that assure people who test positive have access to safe, clean, and comfortable spaces to live separate from their contacts when advised are indispensable.

As long as a positive COVID-19 test equals lost wages, migrant workers who live paycheck to paycheck will naturally be disincentivized to seek care for COVID-19-related symptoms. Lost wage funds that soften some of that economic penalty, coupled with medical-legal partnerships that ensure employers guarantee that workers have a job once they are able to return to work, will be a good investment in the long run for controlling the spread of the pandemic among migrant worker communities.

Mandate workplace safety best practices

The health and safety of migrant farmworkers begins in the fields, where they are routinely exposed to harsh working conditions with limited access to legal representation. For migrant workers without documentation, these issues are compounded by the fear of deportation or repercussions from farm owners if workers report violations of their rights. For all migrant farmworkers, it is imperative that worker-led, enforceable protections are established and expanded throughout the United States.

Worker-driven Social Responsibility (WSR) programs are one such powerful mechanism with a proven record of addressing the structural and systemic barriers to health. The Fair Food Program (FFP), created in Immokalee, Florida, by the Coalition of Immokalee Workers (CIW) and operating in seven states along the eastern seaboard, established the WSR model. It has improved wages and virtually eliminated forced labor, sexual violence, wage theft, and dangerous working conditions on participating farms. It offers education and a 24-hour complaint resolution process to workers as well as an in-depth monitoring and auditing regime, conducted by a third-party monitor, the Fair Food Standards Council (FFSC), which returns to farms and speaks with workers year after year, bringing technical expertise and unique familiarity with the work environment and worker population. The program is enforced through legally binding agreements between the CIW and major food retailers that commit to buy from farms in good standing with the CIW's Fair Food Code of Conduct and to cut purchases from agricultural employers that fail or refuse to ensure the human rights protections laid out in the code. Because the code requires, at a minimum, compliance with existing law, the CIW's Fair Food Agreements also enforce true legal compliance with applicable worker

protections—including those related to health and safety—in an industry in which government enforcement and private litigation have otherwise failed to fundamentally change the historical reality of widespread noncompliance with the legal rights of farmworkers.

Critically, new COVID-19 protections have been integrated into the Code of Conduct and are subject to the same enforcement and monitoring protocols as other provisions of the code. This means that the FFP brings to farmworkers real, enforceable protection against the violation of COVID-19 safety laws where they exist—which is only in a handful of states, as neither the Occupational Safety and Health Administration (OSHA) nor the Centers for Disease Control and Prevention have currently issued binding rules to protect farmworkers—as well as enforceable protections under the code even in the absence of any COVID-19 safety laws on the books (as is the case in Florida, for example).

It should thus come as no surprise that the WSR model is now being replicated in new industries and geographies across the United States as well as internationally and is considered the emerging gold standard of social responsibility.^{12,43}

During the COVID-19 pandemic, workers will need access to information on how to protect themselves, in the language they are most comfortable with, and a dependable supply of materials such as personal protective equipment that they can use reliably. The FFP requires all of this. A longer list of best practices has been compiled by Data for Progress, but these measures will only be as strong as the legal and economic frameworks articulating and enforcing them, which is why WSR programs like the FFP are absolutely necessary.⁴⁴

Legislate the broader changes that are both necessary and possible

Despite the reality that COVID-19 has ravaged migrant farmworker communities across the country, the Coronavirus Aid, Relief, and Economic Security (CARES) Act does not provide the necessary safety net for undocumented immigrants, who constitute a significant portion of migrant farmworkers.^{39,45} Arguably, this has left millions of workers even more vulnerable to COVID-19 infection and mortality. Specific actions must be taken to address the historical structural and systemic barriers that have long stood between migrant workers and health. Strengthening the H-2A guest-worker program and OSHA regulations to implement some of the suggestions outlined in this chapter, such as paid sick leave, is a practical and immediately available example that would provide many workers new capacity to better participate in the measures aiming to control the spread of the virus. All such measures must be accompanied by adequate funding for effective enforcement mechanisms.

Conclusion

Although COVID-19 has struck the United States and countries across the globe with the worst public health crisis in a generation, there is far more at stake with this pandemic than defeating a novel virus. From the profound health disparities in how the virus affects communities of color, to the swift and deadly spread through migrant worker camps, COVID-19 has laid bare long-standing inequities and vulnerabilities in US society, challenges that are deeply rooted in the country's history and that can no longer be ignored. In migrant worker communities, COVID-19 has painfully demonstrated the country's failure to fully end an economy built on the backs of enslaved people. Systems of forced and coerced labor persist to this day, accompanied by the degraded living and working conditions inextricably tied to that economic system. In addition, US foreign policy over the past century has contributed to economic and political conditions abroad that force laborers to emigrate from their homes to seek work and safety in the United States. In light of the chapters of history that have led up to this moment—and contributed to today's public health crisis—the question of how the United States addresses health risks to migrant laborers is not only a technical question that affects the US food supply chain, but also a moral question that forces a deeper reckoning with injustices that have challenged the soul of the nation since its founding.

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Conclusion

Sanjay Basu

COVID-19 has killed more than 2.4 million people worldwide, including nearly 500,000 people in the United States, at the time of this writing.¹ COVID-19 infections and deaths continue to rise during this winter period, and several more months will pass before the vaccines recently approved for distribution are widely available.² COVID-19 has—like so many diseases—exposed the fault lines of our societies, revealing the most vulnerable populations and the most striking inequalities within them. COVID-19 in the United States, for example, has disproportionately impacted Latino and non-English-speaking workers in meat-packing plants;³ Native Americans isolated from health care sources and frequently occupying multigenerational households;⁴ Black Americans, especially those held in US jails and prisons;⁵ people living in understaffed and underequipped nursing homes;⁶ and lower-income populations who could not afford to stop working or work from home because they were employed through in-person jobs, as varied as sanitation and nursing.⁷

Some countries, such as South Korea, responded to COVID-19 with comprehensive government-led testing, rapid contact tracing, supportive isolation in subsidized housing, and proactive dissemination of health care equipment and treatments.⁸ In the United States, by contrast, testing systems were left federalized and overwhelmed,^{9,10} infection control guidelines and epidemiological reports were undermined or suppressed by political appointees,¹¹ and some groups refused to disband large gatherings under the premise that the coronavirus was a hoax or an effort to undermine personal freedoms.¹²

Years from now, our children and grandchildren will ask: What did we do during this epidemic? Did we stand idly by, or did we act? The experience of primary care providers during COVID-19 has been varied, but almost everywhere we see primary care providers following the call of duty to provide care for those infected with COVID-19, as well as those impacted by the loss of availability of care for chronic conditions, the mental health impacts of isolation and profound loss, and economic impacts of recession and unemployment. If prior disasters—the two world wars, the HIV epidemic, and the Great Recession—are to guide our response to COVID-19, they suggest that primary care providers must brace for prolonged, multitiered impacts of COVID-19, beginning with the acute infections themselves, continuing through the consequences of missed chronic care

as varied as delayed cancer screenings¹³ and exacerbated chronic illness, and continuing with mental health and substance use challenges accelerated by economic upheaval.^{14,15}

As primary care providers continue caring for patients during COVID-19, the authors of the preceding chapters have highlighted practical and philosophical barriers to and opportunities for delivering excellent primary care.

First, international responses to COVID-19 were diverse, and many systems relied on distributed but coordinated primary care centers to triage patients, offer testing, support social barriers to safe isolation, address exacerbated social determinants of health such as worsened food insecurity, and maintain support for chronic disease management. Hence, COVID-19 responses did not have to be based on tertiary care and intensive care units, but could more proactively rely on strong community-based primary care and population health centers where such investment—particularly in universal health coverage—had taken place.¹⁶⁻¹⁸

Many providers were able to reach vulnerable and often isolated populations, engaging people through community health workers, on-site services nearing sites of employment or housing, or expanded technology access to telemedicine services.^{4,19} In the experience of this author in San Francisco, health care services for homeless or marginally housed adults were provided through motels designated for isolation or quarantine, and “room service medicine” through mobile teams going door-to-door in such facilities was a strategy to maintain medical care for those with chronic conditions or those with COVID-19 who were not sick enough for hospitals or needed to be treated in improved settings once hospitals were full. It remains to be seen to what degree pent-up demand for medical care will lead to increased utilization in 2021, particularly for exacerbations of routine chronic conditions such as heart failure, diabetes, and hypertension, as well as due to missed preventive activities such as cancer screening.

Second, COVID-19 brought into sharp relief the contrast between universal capitation-based health care financing and the traditional US fee-for-service approach. Primary care practices reliant on fee-for-service medicine were adversely financially impacted despite rapid efforts by payers to pay for telemedicine services. Many practices lacked technical capabilities to reliably deliver telemedicine, and destitute patients were unable to reliably gain access in some locales.²⁰ By contrast, capitation-based financing clearly enabled capitated practices to pivot toward new forms of comprehensive care, and will need to be furthered to ensure care delivery through diverse workforce members including community health workers. Expanding the disciplines of the primary care team requires further understanding of the value and strategies for delivering integrated behavioral health and integrated oral health, as well as breaching divides between primary and specialty care, virtual and in-person care, and community- or home-based and clinic- or hospital-based care.

Third, COVID-19 has shined a light on the need for primary care practitioners to engage in the political processes that define risk and mortality across our societies. During the height of the first wave of COVID-19 infections in the United States, the Black Lives Matter movement staged protests around the country to highlight and protest the disproportionate deaths of Black people and members of other minority groups at the hands of police officers. The irony was not lost on the primary care provider community that Black Americans were at

disproportionate risk from both police violence and the structural racism that led to disproportionate Black infection rates and mortality from COVID-19²¹—from housing and lending discrimination leading to crowded living conditions in multigenerational households; to education, employment, and health care discrimination leading to people having less confidence in public health advice and less ability to access employment that facilitated sheltering in place and working from home during peak incidence periods.²²

The history of community health centers explored in this volume reveals how consistently the primary care provider community has been inspired by community movements and has become necessary for the success of movements for civil rights and the mitigation of injustice. As COVID-19 continues to have a disproportionate impact on disadvantaged communities, and as we seek to address the underlying structural determinants of disease, we as primary care providers have a responsibility to address structural barriers to good health in anticipation of the next pandemic. This means overcoming concerns that ignoring political processes is the same as being politically fair (a false equivalence between scientifically minded and scientifically unsound policy proposals); scientific societies, including those publishing *The New England Journal of Medicine* and *Scientific American*, endorsed political candidates and policies for the first time during COVID-19, given the dangers to public health posed by anti-science politicians during the pandemic.^{23,24}

As we proceed with improving primary care practice into the future, the authors of this report have put forward specific strategies to improve access to high-quality primary care, including adoption of a diverse mobile workforce and telehealth technologies with greater accessibility features. The authors have emphasized that practice challenges can be addressed through alternative financing arrangements for practices. The authors have also revealed that care strategies focused on vulnerable populations can be adapted to logistical challenges if providers focus on an integrated experience delivered across multiple diverse disciplines through the same clinic infrastructure.

The perspectives in this report are, therefore, ultimately optimistic—demonstrating that the resilience of populations to this pandemic and future ones can be bolstered by flexible, coordinated, and dedicated primary care providers. We proceed into 2021 with great uncertainty about how vaccines will be allocated, who will benefit or be left behind by the hoarding of health care resources, and how the health of populations may recover from this pandemic. We nevertheless hear the voices of these authors as exalting the perseverance of primary care during this period of disparity and the desire to ensure that primary care's service to population health continues to deliver chronic disease prevention, infectious disease control, and a broad suite of services ultimately driven by community needs.

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