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Primary Care Practice Finances In The United States Amid The COVID-19 Pandemic

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ABSTRACT Due to the novel coronavirus disease (COVID-19), virtually all in-person outpatient visits were cancelled in many parts of the country between February and May 2020. We sought to estimate the potential impact of COVID-19 on operating expenses and revenues of primary care practices. Using a microsimulation model incorporating national data on primary care utilization, staffing, expenditures, and reimbursements, including telemedicine visits, we estimated that primary care practices over the course of calendar year 2020 would be expected to lose $67,774 in gross revenue per full time physician (the difference between 2020 gross revenue with COVID-19 and the anticipated gross revenue if COVID-19 had not occurred, interquartile range: –$80,557, –$54,990). We further estimated that the cost would be $15.1 billion at a national level to neutralize the revenue losses caused by COVID-19 among primary care practices. This could more than double if COVID-19 telemedicine payment policies are not sustained. [*Editor's Note: This Fast Track Ahead Of Print article is the accepted version of the peer-reviewed manuscript. The final edited version will appear in an upcoming issue of* Health Affairs.]

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The SARS-CoV-2 coronavirus infection leading to novel coronavirus disease (COVID-19) has had a significant impact on the US health care system, as virtually all elective procedures and the majority of in-person outpatient visits were cancelled in many parts of the country between February and May 2020.[1] Despite substantial benefits of preventing sick and healthy patients from congregating at hospitals and outpatient physician offices, particularly given concerns of capacity and inadequate supplies of personal protective equipment, the financial impact of these strategies has been devastating to both hospitals and physician practices.[2] Lost in the din of hospitals and health systems seeking relief, however, has been the plight of primary care practices and, in particular, independent community-based primary care practices.[3,4]

Although the health system generally and primary care practices specifically have rapidly pivoted to providing virtual care, including by telephone and video visits, 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 is not known.[5] Regulations and policies governing the conduct of and reimbursement for these types of remote visits are fast evolving, producing considerable uncertainty for practices.[5] Many primary care practices have not invested in telemedicine capabilities and may lack the knowledge or know how to implement a telemedicine system in the near term.[6] Consequently, many practices are using telephone visits without certainty about reimbursement, though some private insurers are now reimbursing remote visits at standard evaluation and management (E+M) visit rates, and Medicare recently agreed to pay for telephone visits

retroactive to March 20th.[7–9] More importantly, many patients prefer in-person visits and not all visits and complaints are appropriate to be conducted remotely. Consequently, even in settings that have developed remote capabilities, their uptake is likely to be only a percentage of their 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 reported limiting in-person visits, and 60% were still unable to do any video visits.[10]

Primary care among other specialties is particularly vulnerable since almost all primary care revenue is derived from in-person E+M visits.[11] Primary care provides over half of the approximately 1 billion office visits provided annually in the US, and over two-thirds of visits for those with important chronic medical conditions such as hypertension and diabetes.[12] Although substantial numbers of primary care physicians are employed by hospitals or health systems, over half of the roughly 220,000 primary care physicians nationally continue to operate within the community as full or part owners of independent small practices.[13] In contrast to hospitals or health systems, these practices lack ready access to capital or sufficient financial reserves that would be required to provide a base of support in the absence of ongoing revenue. In addition, according to data from the Medical Group Management Association, the average primary care practice supports four support staff (including clinical and office staff) at a cost of well over $200,000 per year and other operating costs of similar magnitude per full time equivalent physician, and the ability of practices to support such operations in the current environment is unclear.[11] Finally, over 25% of practicing primary care physicians are age 60 and older and disruptions such as we are seeing in current practice could lead to higher rates of retirement, which would compound already existing shortages of primary care.[13] Primary care practice closures may compromise access to care.

In this context, we used a validated microsimulation model of primary care finances to estimate the potential impact of the current COVID-19 pandemic on operating expenses and revenues of primary care practices.[14] Our analysis provides several potential advantages over anecdotal "back of the envelope" calculations. First, we are able to estimate the range of impacts across primary care practices of different types. Second, we are able to simulate potential effects from strategies that might be used to mitigate the financial effects of the current situation.

Study Data And Methods

The modeling methods and reporting followed the Consolidated Health Economic Evaluation Reporting Standards (see checklist in online appendix exhibit 1).[15]

INPUT DATA AND SIMULATED POPULATIONS The model simulated individual primary care practices, defined as general practice, general internal medicine, general pediatrics, geriatrics, or family medicine practices under any form of ownership (independent ownership or hospital group/organization ownership), within the United States. The model simulated practices organized into four types: Federally Qualified Health Centers (FQHCs), non-FQHC urban practices in high-poverty areas (≥20% of population in the ZIP code under the federal poverty threshold),[16] non-FQHC rural practices in high-poverty areas, and practices outside of high-poverty areas. The model's input data were obtained from the Medical Group Management Association DataDive (MGMA Cost and Revenue report, filtered to $N = 1{,}322$ primary care single-specialty practices surveyed)[17] for practice visit volume, staffing, revenue, and cost estimates for non-FQHC practices. We note that the MGMA data are a convenience sample that tends to sample disproportionately from for-profit practices, hence we supplemented the input data with data from the National Association of Community Health Centers ($N = 1{,}375$ practices)[18] for FQHCs. Additionally, data from the National Ambulatory Medical Care Survey ($N = 1{,}293$ practices) was used to identify the distribution of patients by insurance type across each practice type (proportion of patients with each of Medicare, Medicaid, commercial, or self-pay/uninsured as principal payer at each practice type).[19] The model input parameters and data sources are further detailed in supplemental exhibit 1 and appendix exhibit 2.[15] As shown in the exhibits, the practice groupings were chosen in part because they differ substantially in their key parameters around payer mix, patient and visit volume, and in sources of financing that may render them differentially affected by alternative policy proposals for funding. Note that due to inadequate practice-specific sample sizes for costs, we sampled from the full national range of costs across all practice types to diminish the influence of outliers.

OUTCOMES The primary model outcome was net practice revenue per full-time-equivalent (FTE) physician over the course of calendar year 2020, in two scenarios: with and without furloughs on staff to decrease practice expenses. We also include monthly estimates during the time period when in-person visit utilization due to COVID-19 is expected to be at its lowest level in order to show the extent to which month-

ly cash flow is being impacted. Secondary model outcomes were gross revenues and gross costs including salaries, benefits, and overhead expenditures per FTE physician in 2020. Finally, we estimated the total financial support to practices needed at the national level to cover the losses to practices from COVID-19, based on data on the number of active primary care practitioners.[13] The study perspective was the practice perspective, with a 1-year time horizon. Undiscounted costs were expressed in 2020 US Dollars.

BASELINE COVID-19 IMPACT SIMULATION The model was used to simulate the impact of COVID-19 by accounting for two phenomena: changes in visit volume, and conversion of some visits to telemedicine visits, with associated implications for payments. Both changes in visit volume and the proportion of visits converted to telemedicine were obtained from a Commonwealth Fund study, based on electronic health record check-in rates and visit codes ($N = 1{,}600$ practices representing over 50,000 providers).[6] We note that the Commonwealth study was based on data from a scheduling and check-in software used in all 50 states and by independent single-provider practices, multispecialty groups, FQHCs, and large health systems, yet still represents a convenience sample and no data to assess its representativeness have been made available. The primary data covered the period from February 1 through May 16, 2020, after which we projected the volume forward using smoothing splines. We anticipated that even following the easing of shelter-in-place policies, visit volume would rebound to a level below the January 2020 baseline, due to an anticipated economic recession and continued social distancing; we specifically adopted a six percentage point reduction below baseline for total visits, as observed during the 2008 economic recession,[20] with continuation of telemedicine services into the foreseeable future (such that total visits remained 6% below baseline and that 25% of these visits are via telemedicine, given spacing of visits and lower in-person visit volume due to both continued social distancing requirements for waiting rooms and cleaning of clinic rooms between patients leading to fewer in-person visits). For telemedicine visits, we utilized the latest-available reports from Medicare, Medicaid and commercial payers to estimate payment levels for telemedicine visits (appendix exhibit 3),[15] including the recent decision by CMS to reimburse telephone visits at E+M rates retroactive to March 1, 2020.[7–9] We assumed that these payment policies would be in place through at least the end of the calendar year, though we additionally conducted a sensitivity analysis (below) simulating early reversion to prior payment rates for telemedicine. The visit volume and telemedicine conversion rates by calendar month were applied across all visit types by Current Procedural Terminology (CPT) code. To estimate the annual impact, we assumed that the pandemic impacted practices starting March 2020 and that restrictions on in-person visits were loosened beginning May 2020, and fully ended (with the exception of 6-foot social distancing) as of August 2020.

ANALYTIC APPROACH We simulated each month of the calendar year 2020 by calculating the visit volume by CPT code and associated payments for each of the four types of practices. We limited the analysis to calendar year 2020 given high uncertainty in the future trajectory of the pandemic at the current time. A microsimulation approach was utilized, in which each of 10,000 practices were simulated for each of the four practice types, to help identify the variability in outcomes among practices. Specifically, we repeatedly sampled 10,000 times from the distribution of each input parameter in appendix exhibit 2 for each of the four practice types, to estimate the mean and distribution around the mean of each outcome metrics.[15] We simulated two scenarios in the baseline simulation: that practices maintained their expenses for salary, benefits, and overhead, not changing their overall costs; or that practices furloughed non-physician staffing levels such that salary and benefits levels for non-physicians were reduced to those of the 25th percentile of practices (appendix exhibit 2).[15] The model was previously validated by ensuring that the estimates of practice revenue and cost were concordant with independent survey data by practice characteristics.[14]

Note that we deviated from our prior validated model in that we did not have detailed utilization changes during COVID-19 from primary care practices at the state level, hence we present only the aggregate national results from the model (i.e., though the model does have underlying state-specific data on patient demography and utilization at baseline, we did not have COVID-19-period data on utilization and revenue change at the state level). To match this choice for calculating net revenue, we additionally included staffing and expenditure values across the full national sample. This simplification widens the overall confidence intervals in our outcomes, as we sampled across the variation among all states rather than sampling from narrower state-specific estimates.

ALTERNATIVE SCENARIOS Five alternative scenarios were simulated, with the first designed to understand the impact of uncertainty in the course of the pandemic, the second and third

to understand uncertainty in policy responses to primary care payments, and the final two to understand how alternative ways of conceptualizing groups of primary care practices would affect our results (see appendix exhibit 4 for a tabular view of scenarios).[15] First, we estimated the impact of a second shelter-in-place during November and December 2020,[21] having half as much impact on visit volume as the prior shelter-in-place. Second, concordant with current policy proposals,[22,23] we simulated what capitated payment level, in terms of per member per month global payment, would be required to enable practices to make up their net revenue loss due to COVID-19 for calendar year 2020, assuming the payment would be made retroactively for the entirety of the pandemic. Third, we estimated what would happen if telemedicine payments revert back to the pre-COVID-19 levels starting October 1, 2020. Fourth, we recomputed the outcomes when we re-stratified practices by independent ownership versus hospital ownership. Fifth, we recomputed the outcomes when we re-stratified practices by practice size, in terms of the number of FTE physicians in the practice.

LIMITATIONS Our study is subject to several limitations. As with any model-based assessment, our analysis required assumptions. We assumed that current reimbursement policies (particularly around telemedicine visits including audio-only visits being permitted for reimbursement) would remain unchanged, even after the resumption of in-person visits. We did not account for changes in the payer mix that may result during calendar year 2020 due to unemployment, additional costs of telehealth, practice closures, or new costs to practices including the costs of disinfection or personal protective equipment to prevent coronavirus transmission. We only focused on the portion of the practice revenue related to fee-for-service visits, leaving aside capitated payments that we assumed as constant. Our data also might under-represent the contribution of other types of providers such as nurse practitioners or physician assistants to the provision of primary care, as practices with a higher share of such providers might be under-represented in the MGMA data that underlie the modeling. Both the MGMA DataDive and Commonwealth Fund study are convenience samples, such that the mean outcome values may not be nationally representative; hence, our estimates of uncertainty around each outcome may help understand the variations that may be observed for each practice type, around each mean estimate. Finally, we had to make assumptions about the extent and duration of the current and future shelter in place orders and these might under or over-represent the timing and duration of such orders and their impact on primary care practices.

Study Results

BASELINE COVID-19 IMPACT SIMULATION Our data show that the percent change in visit volume in the context of COVID-19 was at its low point in late-March for all types of visits (down 58 percent) and early-April for in-person visits (down 69 percent) and that the rebound would be expected to reach a steady state in mid-June (although still below normal) (supplemental exhibit 2).[15] Based on this change in visit volume in the context of COVID-19, we estimate that primary care practices over the course of calendar year 2020 would be expected to lose $67,774 in gross revenue per full time physician due to the effect of COVID-19 on fee-for-service payments (interquartile range [IQR]: –$80,557, –$54,990; the difference between 2020 gross revenue with COVID-19 of $474,416 and the anticipated gross revenue if COVID-19 had not occurred of $542,190) (supplemental exhibit 3 and appendix exhibits 2 and 5).[15] The loss in gross revenue would result in calendar year 2020 net revenue (gross revenue minus total practice costs) of –$57,190 (IQR: –$265,636, +$119,803) per full time physician if practices maintained their pre-existing costs. The interquartile ranges cross zero, implying that some practices would incur debt (negative net revenue) while others may maintain some positive net revenue. By contrast, the loss in gross revenue would result in net revenue of -$28,265 per full time physician (IQR: –$205,503, +$127,034) if practices furloughed staff and reduced salary and benefit costs to the 25th percentile of staffing levels during the time period shelter in place was in effect (noting that in our simulation, furloughs reduce the practices' operating loss but not revenue; supplemental exhibit 3 and appendix exhibit 5).[15] We modeled that the lowest levels of revenue would be expected in the month of April 2020 (supplemental exhibit 4 and appendix exhibit 6),[15] during which gross revenue would be expected to be a weighted average of $26,601 lower than usual per full time physician over the course of the month (a 58.9% loss; IQR: –$31,619, –$21,584) from the baseline of $45,182 (supplemental exhibit 5).[15]

Supplemental exhibit 3 details the gross and net revenue estimates by practice type depending on practice expenditures, while supplemental exhibit 5 provides the overall net revenue estimates by calendar month.[15] The practices facing the greatest losses in gross revenue due to COVID-19 in the simulation were rural non-FQHCs, who would be expected to lose $75,274

in gross revenue per full time physician over the calendar year on average (IQR: –$76,367, –$74,180) from a baseline of $602,188, resulting in net revenues of –$4,691 per full time physician (IQR: –$115,998, +$104,332) if practices maintained their pre-existing costs, or $24,234 per full time physician (IQR: –$55,866, +$104,332) if practices furloughed staff and reduced salary and benefit costs to the 25th percentile of staffing levels.

Given the number of active primary care physicians (N = 223,125), we estimated that the cost would be $15.1 billion (IQR: $12.3 billion, $18.0 billion) at a national level to neutralize the gross revenue losses caused by COVID-19 among primary care practices, without subjecting staff to furloughs.

ALTERNATIVE SCENARIOS First, we estimated the impact of a second shelter-in-place during November and December 2020, having half as much impact on visit volume as the prior shelter-in-place. Under this scenario, primary care practices over the course of calendar year 2020 would be expected to lose $85,666 in gross revenue (IQR: –$101,824, –$69,507), resulting in net revenues of –$75,082 (IQR: –$280,153, $98,536) if practices maintained their pre-existing costs, or –$46,157 (IQR: –$220,020, $105,767) if practices furloughed staff and reduced salary and benefit costs to the 25th percentile of non-physician staffing levels (appendix exhibit 7).[15] Given the number of active primary care physicians (N = 223,125), we estimated that the cost would be $19.1 billion (IQR: $15.5 billion, $22.7 billion) at a national level to neutralize the gross revenue losses caused by COVID-19 among primary care practices, without subjecting staff to furloughs.

Second, we simulated what capitated payment level would be required to enable practices to have no net revenue loss for calendar year 2020 at the projected levels of visit volume and telemedicine uptake. We estimated that beyond fee-for-service payments, practices would require an incremental global capitated payment of $3.27 per member per month (IQR: $2.70, $4.77; supplemental exhibit 3 gross revenue losses divided by supplemental exhibit 1 unique patient counts, then divided by 12 to convert to a per-month basis) to neutralize their gross revenue losses due to COVID-19 during the calendar year 2020, or, to fully replace usual FFS gross revenue regardless of COVID-19 with a capitated payment, would require a payment of $26.19 PMPM (IQR: $21.57, $38.19; supplemental exhibit 1 total gross revenue per year divided by supplemental exhibit 1 unique patient counts, then divided by 12).[15] Due to differences in patient populations and payer mixes, this varied from $18.55 PMPM for FQHCs (IQR: $13.83, $33.89) to $30.82 PMPM for non-FQHC urban practices in high-poverty zones (IQR: $28.44, $36.62).

Third, we estimated what would happen if telemedicine payments reverted back to the pre-COVID-19 levels starting October 1, 2020. Under this scenario, primary care practices over the course of calendar year 2020 would be expected to lose –$173,453 in gross revenue (IQR: –$207,511, –$139,395), resulting in net revenues of –$162,870 (IQR: –$350,041, –$7,151) if practices maintained their pre-existing costs, or $133,944 (IQR: $289,908, $80) if practices furloughed staff and reduced salary and benefit costs to the 25th percentile of non-physician staffing levels during the period of the shelter-in-place (appendix exhibit 8).[15] Given the number of active primary care physicians (N = 223,125), we estimated that the cost would be $38.7 billion (IQR: $31.1 billion, $48.3 billion) at a national level to neutralize the gross revenue losses caused by COVID-19 among primary care practices, without subjecting staff to furloughs.

Fourth, we recomputed the outcomes with the subset of practices for which the data provided would permit re-stratification by independent ownership versus hospital/delivery-system ownership. We observed higher gross revenue losses among independently-owned than hospital-owned practices due to a higher proportion of commercially- and Medicaid-insured to Medicare-insured patients and delays and variability among commercial and Medicaid payers in paying for telemedicine at in-person rates (resulting in 17% higher losses among the independently-owned, at -$73,153 lost gross revenue versus $62,395 among hospital-owned practices, on average; appendix exhibit 9).[15]

Fifth, we recomputed the outcomes with practices re-stratified by practice size, in terms of the number of FTE physicians in the practice. We observed higher gross revenue losses among smaller practices with three or fewer full-time physician equivalents than among larger practices, due to a higher proportion of commercially- and Medicaid-insured to Medicare-insured patients and the delays and variability among commercial and Medicaid payers in paying for telemedicine at in-person rates ($78,053 lost gross revenue if three or fewer full-time physicians, versus $64,481 among those with four to six, and $60,788 for those seven or larger, on average; appendix exhibit 10).[15]

Discussion

Though it is difficult to envision presently, at some point in the future, the extent of disruption due to the COVID-19 pandemic will ebb. Looking forward to that time, it will be crucial that the US

have a functioning primary care system to meet the pent up needs of the population and to resume attention to controlling the major chronic medical conditions that collectively will determine the health of Americans for many years to come. Thus, as the COVID-19 pandemic continues to ravage the economy, it is important to understand the potential impacts on primary care and to consider potential mitigation strategies that will maintain and even strengthen the primary care system in the ensuing years. Under a variety of scenarios, we estimate that primary care practices will lose over $65,000 per FTE physician (or $325,000 per typical 5-person practice) from fee-for-service payments without any attempts at mitigation, even assuming that practices quickly pivot to providing telemedicine services to at least in part make up for the loss in in-person visits (though it is likely that some practices were not able to make this pivot as quickly). Across the diverse primary care system, this equates to a net loss to primary care of nearly $15 billion in current dollars under relatively optimistic assumptions, even if we are not hit with a second serious wave of COVID-19 and associated shelter-in-place restrictions in coming months. We also note that this loss would balloon substantially if telemedicine payment rates revert back to pre-COVID-19 levels towards the end of the year. Independent and smaller practices were found to be particularly hard-hit in our sensitivity analyses, and it is notable that hospital systems and therefore hospital-owned practices experienced greater relief following recent legislation.[2] Our results imply that federal subsidies (under the CARES Act and subsequent legislation) are unlikely to be sufficient to ensure the financial viability of primary care practices.

Why should we care about primary care in particular when so many areas of the economy are being similarly impacted? For instance, current estimates are that the hospital industry is facing even larger financial challenges,[1] and certainly the same argument can be made about many other sectors of the economy outside of medicine. We think primary care is different for several reasons. First, after COVID-19 recedes, the US will continue facing the challenge of caring for the 100 million or more adults with diabetes or pre-diabetes,[24] and hundreds of millions with obesity,[25] just to name a few conditions, particularly given the fact that over 60% of visits nationally for such chronic conditions are delivered in the primary care setting. Second, a well-functioning primary care system is needed to serve as the "first contact" entry point to the health care system and to determine if and when patients require specialist or emergency care. Absent such a system, patients will be forced to rely even more heavily on emergency rooms and, in some cases, direct access to specialists, both of which could result in unnecessary care and expenses, potentially far in excess of the above estimates, that might otherwise have been averted. Third, accumulating evidence suggests that primary care is good for the health and quality of care of Americans. Areas of the country with increasing levels of primary care capacity saw improvements in life expectancy[26] and patients who use primary care have been shown to receive substantially higher quality care,[27] including increased provision of recommended preventive and chronic disease services. A health care system without the necessary primary care infrastructure therefore is likely to be increasingly fragmented, more costly, and less effective, and these costs will be borne by all Americans. Independent practices in high-poverty areas may be particularly vulnerable to closure and an important target for financial interventions. There is potential for practice closures to exacerbate existing disparities in care given the types of practices that are most at risk and where they are located. Our results ultimately highlight vulnerability of primary care practices to financial demise due to fee-for-service and visit-based payment policies, indicating that capitation-based payment reforms may be key to ensuring robustness of primary care into the future. Relatively small capitated payments from payers, employers or government could be used to mitigate losses and to keep practices from closing.

Conclusion

We anticipate large, meaningful reductions in revenue for primary care practices as a result of COVID-19, which may result in sufficient financial adversity as to threaten practice viability should practices be unable to secure sufficient funding through either fee-for-service or capitated payment mechanisms. ■

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NOTES

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