

# Moving forward:

## Turning COVID-19 Lessons Learned into Opportunities

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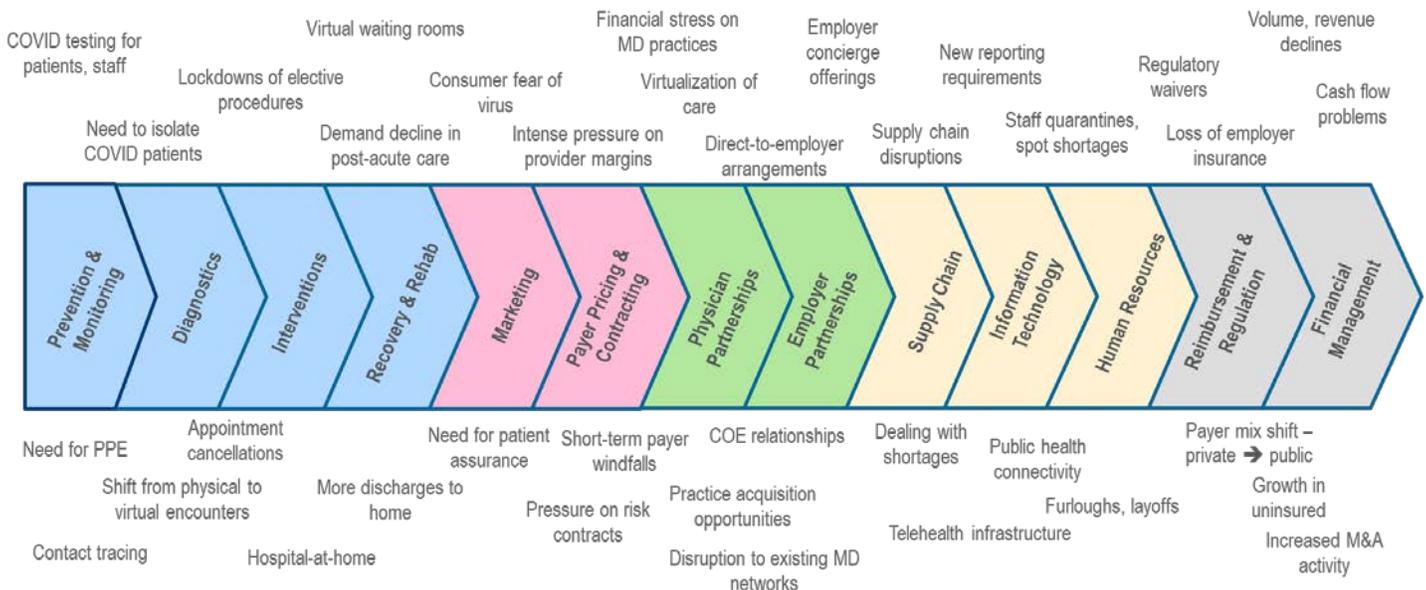


# Moving Forward: Turning COVID-19 Lessons Learned into Opportunities

**The COVID-19 pandemic** has elicited a rapid, massive response from health care providers, pharma and device companies, manufacturers, and national, state, and local governments. Health systems have borne the brunt of the epidemic, and many have performed heroically in treating patients in hard-hit areas like New York City, New Orleans, and Detroit.<sup>1</sup> Pharmaceutical and biotechnology companies are moving at “warp speed” to develop tests for the virus, treatments to reduce morbidity and mortality, and vaccines to prevent or at least moderate its effects.<sup>2</sup> Medical equipment makers have ramped up production of critical PPE, ventilators, and testing equipment and supplies, and other manufacturers are pitching in and modifying their production lines to produce critical shortage items.<sup>3</sup> And CMS and other government regulators have supported these efforts by relaxing regulations that would pose obstacles to dealing effectively with the virus.<sup>4</sup>

Despite all this productive activity, it is difficult to overstate the impact of the pandemic on health systems; every element in the health system value chain has been disrupted (Figure 1):

Figure 1. COVID-19 Pandemic Health System Disruptors



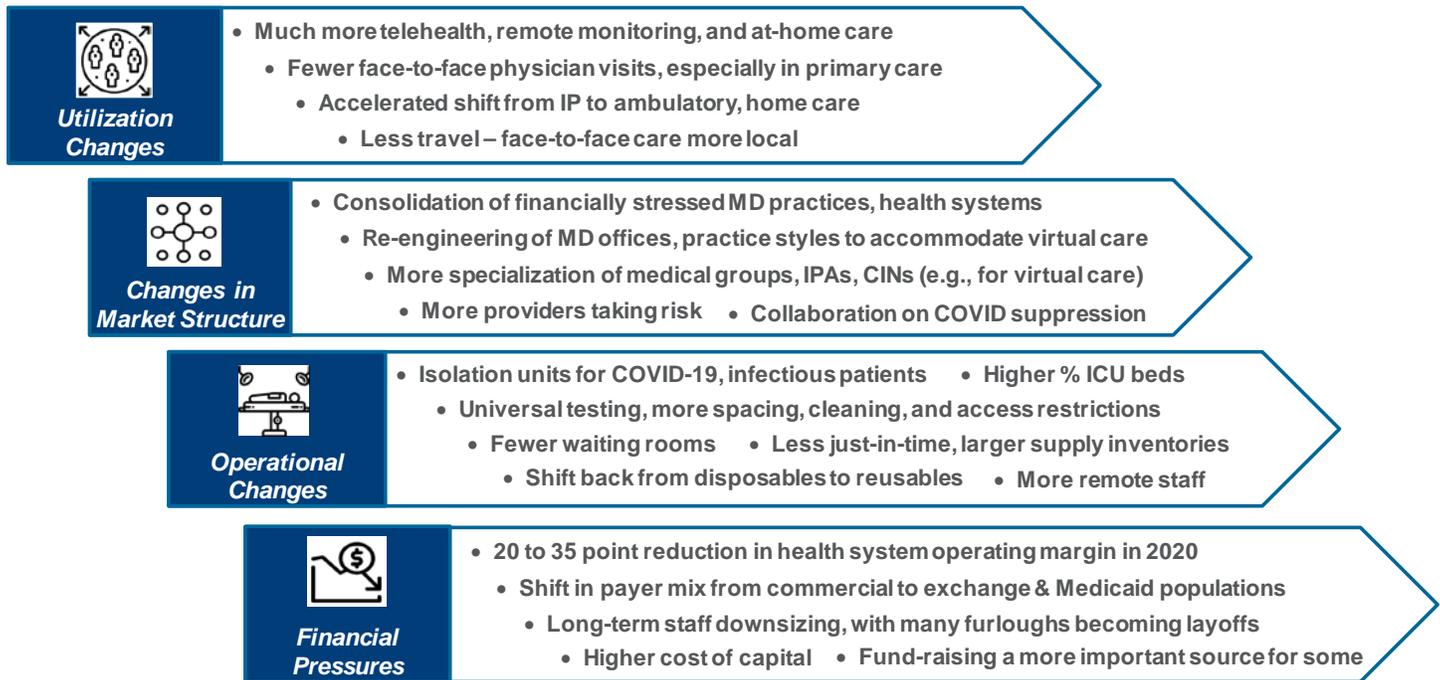
Beyond these specific disruptors, the pandemic has also increased risk across the value chain. The uncertain trajectory of the coronavirus requires that health systems plan for multiple scenarios and husband their resources to protect against future contingencies. How long will COVID-19 last? Will we have a major resurgence in the fall, or sooner if reopening gives it new life? Can treatments be improved, especially for the most

vulnerable? Will we have an effective vaccine, and, if so, how soon? How will states and the federal government respond to these uncertainties? How will consumers / patients / voters react? Dealing with these major risks requires thoughtful strategic planning, resilient, adaptive organizational cultures, and financial resources to deal with unexpected contingencies.

# What changes will last?

We recently described a set of priorities for reopening and recovering from the acute stage of the pandemic.<sup>5</sup> This paper is focused on a different set of questions: What changes precipitated by the pandemic will be sustained? What will the COVID Era look like? What strategies should health systems pursue to position themselves successfully for this new world? Figure 2 summarizes four main areas where we believe the future environment will differ significantly from the past.

Figure 2. COVID Era Trends



Long-term changes in each area, and the implications of these changes for health system strategies are discussed below.



## Utilization changes

COVID-19 is having significant effects on utilization patterns for health care services that will outlast the pandemic, many of which represent accelerations in ongoing trends:

- More “virtual” health care (telehealth). Nearly everyone agrees that the COVID-induced shift to virtual patient-provider interactions will persist once the virus is contained. However, there is debate about what the future mix of physical and virtual visits will be. Geisinger’s telehealth visits per day skyrocketed 10,000% during the crisis, and management expects telehealth to remain a significant part of their business after COVID-19 is gone.<sup>6</sup> Jefferson Health had a similar experience and shares Geisinger’s view of the future. Another large health system saw the % of professional encounters that were virtual grow from 14% pre-crisis (relatively high) to 76% in early April and remain at 67% of encounters through mid-May. Leadership believes this percentage will stabilize at 30-40% in the future – and 50% for PCPs. One reason these health systems are anticipating many virtual encounters in the future is that they both hold doctors harmless from substituting virtual for physical visits. Geisinger’s health plan reimburses physicians the same for virtual visits as for face-to-face visits, and all physicians in the second organization are all on salary. Telehealth will undoubtedly grow faster where incentives are aligned with managing the cost and quality of care rather than maximizing FFS reimbursement.<sup>7</sup>

In addition to virtual patient encounters, telemedicine consults among providers will become more common. In 2018 CMS established CPT billing codes for interprofessional internet consultations, and these are being used more and more during the pandemic.<sup>8</sup> For complex conditions like cancer that require multiple specialists, telemedicine consults may enable virtual multidisciplinary clinics, an elusive idea that was not economically feasible with physical visits, but is now practical.

- Fewer face-to-face physician visits. As the number of virtual encounters grows, the number of face-to-face physical encounters will shrink. If PCPs spend half their time conducting virtual visits, primary care clinics will need only half the number of exam rooms they have today. One health system has converted most of its post-surgical orthopedic visits to virtual. Behavioral health virtual visits are growing rapidly. A specialty medical group that conducts only virtual visits across six specialties is experiencing rapid growth. All this has important implications for the sizing and design of ambulatory clinics, effects that will long outlive the virus.
- Accelerated shift from inpatient to outpatient and home care. COVID-19 has increased the complexity of hospital operations and stoked consumers’ fears of becoming infected in the hospital.<sup>9</sup> As long as the virus is around (which could be several years), patients will prefer non-hospital settings, and providers will learn how to deliver more intensive care in these settings. As with virtual care, many of these new practice patterns are likely to persist. In addition, providers are shifting significant hospital care to the home, motivated by the need to keep infectious patients out of the hospital, and enabled by the rapid development of home monitoring technologies.<sup>10,11</sup> It is possible that the virus could stimulate a renaissance in specialty hospitals, if the moratorium were relaxed.
- Less patient travel. Over the past few years, center of excellence (“COE”) contracting has been growing in popularity with patients, payers, and providers, and CMS considers bundled payments an important tool for rationalizing and reducing treatment costs. Going forward, reluctance by patients to travel is likely to result in less long-distance COE care, although telehealth appointments and consults, such as Mayo Clinic is doing, may keep some of this business alive.<sup>12</sup> But the need to provide excellent specialty care locally could also stimulate efforts to credential more regional centers of excellence, potentially aligned with community physician networks, as Intermountain Healthcare is doing.

## Changes in market structure

The ramifications of the pandemic go beyond hospital and health center operations and will have long-lasting effects on markets for health care services. Chief among these are the following:

- *A new wave of consolidation in physician practices and health systems.* As discussed above, the financial impact of the pandemic on health care enterprises has been brutal. Most physician practices and health systems run with slim operating margins, and they are under water today. The question, of course, is how soon markets for health care services will recover. Even with current restructuring efforts, unless we experience a quick V-shaped recovery (which seems unlikely), many existing hospitals will be bankrupt, and many medical practices will not be able to pay physicians what they need to survive. Regardless of the shape of the recovery, the shift in payer mix from private to public, as discussed above, will be a “double whammy” for providers.

This combination of forces will create another wave of consolidation. Distressed physician practices will be bought up by stronger medical groups, health systems, and insurers, who are becoming increasingly active in professional services. Distressed hospitals and small systems with consolidation value will be bought up by larger, better-positioned health systems. This prospect is concerning some employers and insurers, who have proposed a moratorium on health sector consolidations.<sup>13</sup> Health systems with resources, however, should have active search efforts underway to identify potentially useful additions to their service mix and evaluate their long-term viability and value.

- *Expanded opportunities for national brands,* including new business relationships with local providers. The combination of health system consolidation and the scalability of virtual health care sets the stage for national brands like Mayo (one of the most respected brands in the world), the Cleveland Clinic, CVS, and Walmart (maybe even Amazon) to network with regional health providers to provide the best combination of national scale and local care delivery.

- *Re-engineering of physician practices.* The growth of virtual health, discussed above, will change how most physician practices operate. Even if virtual visits end up being only 15-20% of all encounters, the size and configuration of ambulatory practices will have to adapt to accommodate this.<sup>14</sup> Issues that will need to be addressed include:

- *Physician scheduling.* How will physicians mix physical and virtual patient visits? Will physicians conduct virtual visits from their offices or from home?<sup>15</sup> How will their sessions change? (This is especially complex in academic practices, where subspecialists need to meld clinical practice with research and educational activities.)
- *Exam room configuration.* What should virtual exam rooms look like? Can they be smaller than a typical 120 ft<sup>2</sup> physical exam room? What mix of physical and virtual exam rooms will be needed? How will space requirements be affected?
- *Waiting rooms.* Should waiting rooms shrink – or go away entirely? Or should they remain the same size with flow control to maintain social distance?
- *Staffing.* How will existing clinic staffing models change? Will medical groups need “virtual assistants” who are equipped to assist on virtual visits?
- *Connectivity.* How will remote physicians conduct virtual visits?<sup>16</sup> How will physicians working remotely from home connect into health system EHRs?

The costs involved in re-engineering clinic operations will be another factor driving practice consolidation.

- *Further medical group specialization.* Historically, most providers were organized in multispecialty medical groups (e.g., Permanente medical groups, Healthcare Partners, medical school faculty practices), single specialty medical groups (e.g., Pediatrix, anesthesia groups in many cities), or physician networks (IPA, CINs, etc.).

Over the last 5-10 years, single specialty groups have been growing, and a variety of medical groups have formed around other dimensions – e.g.:

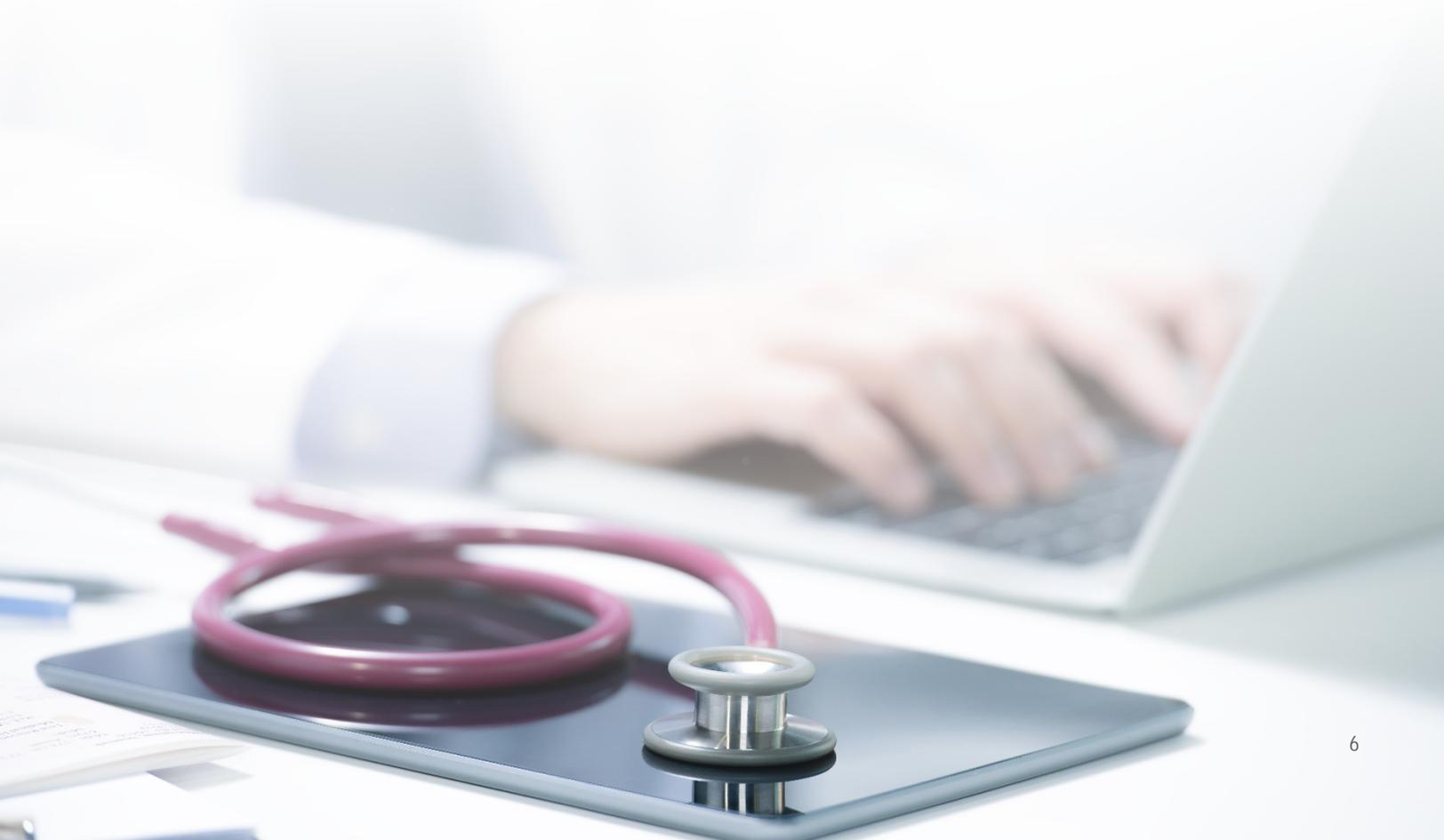
- Population segment – Molina MG (Medicaid patients), One Medical (young commercial patients), ChenMed and Iora Health (Medicare patients)
- Type of reimbursement – Village MD (capitated and risk-based contracts).
- Locus of care delivery – Access Medical (virtual specialty care), Premise Health, (worksite care)

The COVID-19 pandemic has opened up new avenues for medical group specialization and will accelerate this trend.

- More provider risk contracting. Ironically, the pandemic has demonstrated that under some conditions risk contracts can be less risky than fee-for-service contracts. Providers with provider-sponsored health plans or material risk contracts (e.g., capitated medical groups) were relatively protected from the sudden decline in utilization brought on by COVID-19. We expect this lesson will not be lost on health systems, and that they will push to take on more risk from health insurers, either by

negotiating more risk-based contracts or growing their own provider-sponsored health plans. In general, we believe the pandemic will increase competition for populations between health systems and health insurers.

- Collaboration between “private” and public health sectors. Historically, the nation’s relatively small public health sector (e.g., state and local health departments and agencies) has operated separately from the multi-trillion-dollar business of managing and delivering health care services. The pandemic has demonstrated that these two sectors are inextricably intertwined: In emergencies like the pandemic, shortcomings in the public health sector must be covered by the “private” health sector, one way or another. In the future, health systems will be more connected with public health agencies and will collaborate more on public health issues. Some of this burden will fall on IT, which will inherit new data collection, data reporting, and connectivity requirements, including with entities like public health agencies that often don’t have sophisticated IT infrastructures. However, the push toward public / private collaboration is also consistent with efforts health systems are making to address the social determinants of health and reduce health disparities.



## Operational changes

Transformative changes in utilization patterns and health care markets will drive many changes in health system operations that will persist after the pandemic subsides. The most important include:

- Use of isolation zones for infectious patients. This was the first response of hospitals to the pandemic and has resulted in the creation of specific units or “zones” (multiple units) suitable for isolating and treating COVID-19 or any other infectious patients. While some of these beds will undoubtedly be returned to normal use after the virus abates, most hospitals are likely to keep some isolatable beds in reserve in order to reduce their risk of being caught short when they are needed. In addition, the experience the hospitals had creating these units on short notice will make them easier to convert if COVID-19 resurges or in future pandemics.
- Higher % of ICU beds. Primarily because of the shift from inpatient to outpatient care, the population of hospitalized patients has been getting sicker for decades. Because hospitalized COVID-19 patients require high intensity of care over a relatively long period of time, the pandemic has accelerated this trend, and all hospitals should consider increasing their % of medical ICU, stepdown, or “swing” beds in the future.
- More testing, spacing, cleaning, and access restrictions. Hospitals have radically changed their infection control processes, and most now require frequent testing of staff and universal pre-admission testing for all inpatients. Because of the potential for false negatives, some hospitals are requiring repeat testing and 24-hour quarantines before admission. Appointment schedules have been stretched out to increase spacing between patients and facilitate much more frequent cleaning and sanitization. In addition, visiting schedules are now much more limited. While some of these new procedures will be

moderated once the virus threat is gone, few hospitals will go back to the degree of openness that existed before COVID-19.

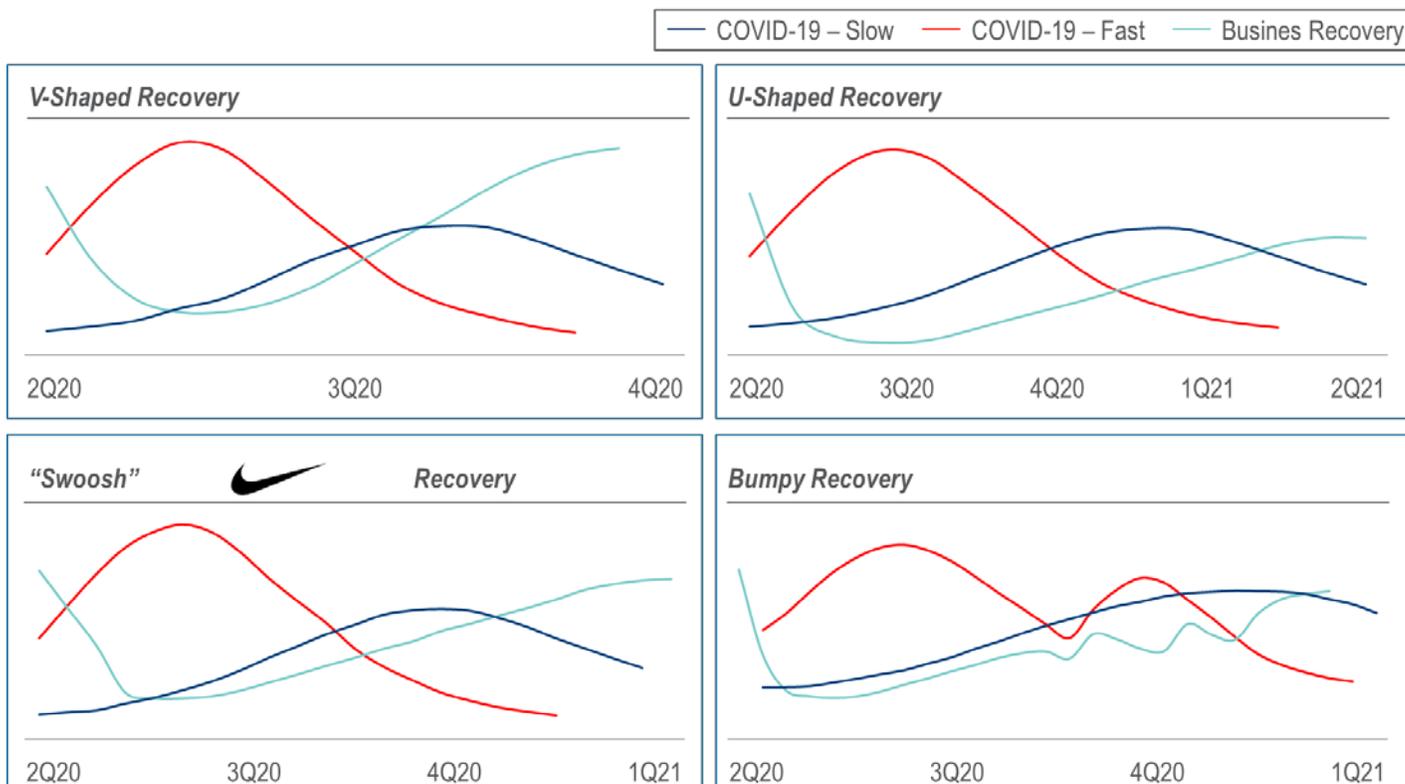
- Less on-site waiting. Waiting rooms have already been spaced out to accommodate social distancing, and fewer buffer spaces means that more services will be delivered “just in time” to patients. Some waiting rooms for ambulatory patients will be eliminated entirely, replaced by “wait in your car” instructions and “ready alerts” on your smartphone, as in popular restaurants.
- More redundancy and reuse. PPE shortages revealed the degree to which supply chains have been overly concentrated. More redundancy will have to be built in to reduce the risk of this recurring in the future. In some cases, purchasing departments will need to expand to accommodate larger inventories.
- Shift back from disposables to reusables. The cost of stocking larger inventories may also convince health systems to reverse the long-term trend of purchasing one-time-use disposables and reuse more supplies. This, in turn, could revitalize “central sterile” facilities, laundries, and other functions supporting reusables.
- More remote staff. Like all businesses, health systems should plan to have many more non-clinical staff (and even some clinical staff) working more from their homes, which will reduce the need for on- and off-campus administrative space.

In the short run, while some of these operational changes will improve patient experience (e.g., less on-site waiting), most will increase staffing intensity and cost per patient. Nevertheless, progressive health systems will treat them as opportunities to re-engineer workflows to make them more patient- and provider-friendly and more efficient.

## Financial pressures

As discussed above, the pandemic, associated lockdowns, and the resulting recession are having a significant effect on health system financial performance in 2020, and most health systems have furloughed and/or laid off staff. There is still much uncertainty about the trajectory of the virus and governmental efforts to contain it – whether we will have a V-shaped, U-shaped, “Nike™ swoosh”-shaped, or bumpy recovery (Figure 3).

Figure 3. Potential Coronavirus Recovery Trajectories



The financial impact of the virus over the next 1-2 years will depend on its trajectory. But the crisis is also likely to have long-term effects that will become part of the COVID Era, including:

- Accelerated shift in payer mix.** Record unemployment has moved many workers out of private commercial health plans into public exchanges, Medicaid, or the uninsured pool.<sup>17</sup> For most hospitals, government payers do not cover full costs, and in some cases (e.g., Medicaid, uninsured patients), they often don't even cover variable costs. As a result, a 1 percentage point shift in share from commercial to other payers reduces hospital operating margin by 1½ - 2 percentage points. Public programs now fund about 49% of all national health expenditures, and this % has been increasing steadily since Medicare was enacted in 1965. The pandemic will accelerate this trend.<sup>18</sup>
- Long-term staff downsizing.** While many unemployed staff will presumably be rehired, it is likely that many of the operational changes driven by the pandemic, enabled by rapidly developing technologies, will keep hospitals and other care delivery sites from hiring all of them back.<sup>19</sup> Virtual health, for example, is likely to enable further increases in physician panel size. Working from home is likely to increase efficiency because of the savings in office space and commute time, if for no other reason. And with almost all health systems now using electronic health records, the potential for further automation, including expanded use of machine learning / artificial intelligence, has increased significantly. These

trends mean that most health systems will be able to deliver more care to more patients with fewer staff.

- Higher cost of capital. Health care has been blessed with low-cost capital for many years, due to a virtuous combination of its largely not-for-profit structure, a history of steady growth through booms and busts, good EBITDA margins, and relatively low risk. However, in the COVID-era the industry's cost of capital will likely rise:
  - Financial losses of 2020 will have a long tail for many health systems because of depleted capital pools and deferred capital investments.

- Until the virus poses no threat, consumer demand for elective procedures will likely be constrained by fear of getting sick.
- Margins will be pressured by the accelerated shift from employer-funded insurance to taxpayer-funded coverage and increased “chaotic” cross-sector competition between health systems, insurers, and large medical groups.

One implication of higher cost capital is that health systems are likely to turn more to fund-raising to replenish their capital pools, but this will mainly benefit systems in large, wealthy markets like New York, San Francisco, Los Angeles, Dallas, etc.



# Health system strategies for the COVID Era

Many of these changes in utilization, market structure, operations, and finance suggest new strategies, but each health system needs to carefully assess its own market and competitive position in order to define and prioritize them. Figure 4 lists some of the questions health system leaders should be asking in order to adapt their systems to the COVID Era.

Figure 4. Assessing Your Strategy

Trends	Strategic Questions to Ask
 <p><b>Rapid growth in virtual care</b></p>	<ul style="list-style-type: none"> <li>• How well are consumers accepting virtual visits in our markets? Once the pandemic is over, what will happen to demand for virtual and physical visits to PCPs and specialists?</li> <li>• How effectively have our employed and aligned medical groups integrated virtual care into their practices? What obstacles are they facing? How can we help?</li> <li>• How can we structure reimbursement for virtual visits to keep physicians engaged?</li> </ul>
 <p><b>Accelerated shift from inpatient to ambulatory and home care</b></p>	<ul style="list-style-type: none"> <li>• How will care at home develop in our market (hospital-at-home, remote monitoring, etc.)? What impact will this trend have on demand for inpatient care?</li> <li>• Who are potential partners for delivering home-based services?</li> <li>• What conditions, procedures, and services will migrate from inpatient to ambulatory care over the next ___ years?</li> <li>• Do we need to reconfigure inpatient units in our hospitals to reflect these shifts and help us flex up ICU capacity?</li> </ul>
 <p><b>Continued consolidation of health systems and medical practices</b></p>	<ul style="list-style-type: none"> <li>• What other hospitals or health systems in our markets are in trouble financially? Which might be attractive partners for us? Who is talking with whom?</li> <li>• What physician practices are in trouble financially? Which could be attractive additions to our physician network? What type or relationship are they looking for? Who is talking with whom?</li> <li>• What opportunities do we have to partner with national brands or build our own?</li> </ul>
 <p><b>Greater medical group specialization</b></p>	<ul style="list-style-type: none"> <li>• What emerging specialty medical groups might make good strategic partners for us? How would we benefit? How would they benefit? How might productive partnerships be structured?</li> <li>• What emerging independent medical groups are likely to be major competitors? How should we compete with them? Are there opportunities for co-opetition?</li> </ul>
 <p><b>More provider risk contracting</b></p>	<ul style="list-style-type: none"> <li>• How does risk contracting fit within our overall payer strategy? What opportunities do we have to negotiate more risk-sharing contracts? What type of contracts should we consider? Which payers are likely to be most amenable to sharing risk?</li> <li>• How can we strengthen clinical management of current and future risk contracts? What infrastructure do we need to maximize our return and minimize risk?</li> <li>• Should we launch our own provider-sponsored health plan?</li> </ul>
 <p><b>More pressure on operating margins</b></p>	<ul style="list-style-type: none"> <li>• How will more government-paid business affect our operating margin? What price level will insurers and self-insured employers expect us to achieve to remain in the market?</li> <li>• What operating costs do we need to remain profitable at these price levels?</li> <li>• How should we change our pricing strategy to ensure efficient allocation of resources?</li> </ul>

These questions are best answered in a strategic planning process that examines different scenarios, explores options, develops an overarching vision for how the system will sustain itself, and uses this vision to define and prioritize strategies. The future environment will be different enough that every health system needs to review its current strategic plan to see how it needs to

## Cultural changes needed

Health systems must also examine whether their organizational cultures encourage the innovation and purposeful strategic action this “new normal” world will require. The magnitude of change in health care created by the pandemic exceeds that of any other industry shift since the passage of Medicare. Unlike digital and most physical industries, productivity in healthcare over this period has not grown,<sup>20</sup> and hospitals, physician practices, and insurers have tailored their organizational cultures to succeed in this relatively stable environment. As a result, health systems have traditional hierarchies, pricing and costing systems that support mature products and processes, slow, if not sclerotic decision-making, and relationships with suppliers, customers, and competitors that for the most part preserve the status quo.

As D’Auria and colleagues point out, organizational cultures can seem invisible when change is incremental, but in crises, they either inspire action or produce paralysis.<sup>21</sup> Inspiring action in the COVID Era will require more than just drafting new strategic plans. The information economy is beginning to have a dramatic impact on healthcare productivity and costs through digital health, remote monitoring, robotics, artificial intelligence, precision medicine, and other emerging technologies. Forward-looking health systems will use the pandemic as a catalyst to transform their cultures to become more nimble, entrepreneurial, and welcoming to new ways of operating. Cultural values that inspire action include:

- Leadership that balances support and challenge
- A climate that encourages diversity and constructive conflict

adapt. A strategic review is also important because health systems will be facing increased financial risk in the future. Revenue growth, which carried the industry for more than half a century, will be much harder to maintain with monopoly government payers controlling 50-60% or more of the business. Every health system must develop robust, resilient strategies that can sustain margins and maintain quality in this riskier environment.

- A generous amount of autonomy given to people interfacing with customers and ecosystem partners
- Use of agile cross-functional problem-solving teams linked in networks rather than hierarchies
- Rapid, entrepreneurial decision-making with short feedback cycles.<sup>22</sup>

Health systems that reinforce these values during the pandemic will develop the disciplines they need to keep growing and delivering higher quality, more patient-centered, and more cost-effective care.

In many ways, the COVID-19 pandemic has provided a roadmap for inculcating these values in our health care organizations. During the pandemic, health systems made many rapid changes in their operations and business practices. Clinical processes were re-engineered. Supply chains were restructured. Competitors became collaborators in combatting the virus.

All this rapid-fire change forced health systems to make decisions differently. They had to adopt a “bias for action,”<sup>23</sup> and cut through their bloated bureaucracies to get things done quickly and safely. During the pandemic, power flowed to the front-line clinicians closest to patients and consumers, who called more of the shots.

If health system leaders can remember what this new style of operations felt like and keep it alive in their organizations, the dark cloud of the pandemic will have an important silver lining for U.S. healthcare.

# Authors



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# Footnotes

- <sup>1</sup> See, for example, M Argenziano, K Fischkoff & C Smith, "Surgery Scheduling in a Crisis," *NEJM Correspondence*, May 22, 2020, <https://www.nejm.org/doi/pdf/10.1056/NEJMc2017424?articleTools=true>.
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- <sup>3</sup> M. Pao, "Ford Says It's On Track To Begin Making Ventilators Next Week," *NPR Online Article*, April 16, 2020, <https://www.npr.org/sections/coronavirus-live-updates/2020/04/16/836148398/ford-says-its-on-track-to-begin-making-ventilators-next-week>.
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- <sup>5</sup> BDC Advisors, *op.cit.*
- <sup>6</sup> JR Slotkin, K Murphy & J Ryu, "How one health system is transforming in response to COVID-19," *Harvard Business Review*, June 11, 2020, <https://hbr.org/2020/06/how-one-health-system-is-transforming-in-response-to-covid-19>
- <sup>7</sup> During the pandemic, CMS and most health plans equalized reimbursement for virtual and face-to-face visits, which helped FFS providers like Jefferson Health grow virtual visits dramatically. See JE Hollander & FD Sites, "The transition from reimagining to recreating health care is now," *NEJM Catalyst*, April 8, 2020, <https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0093>. Many observers expect CMS to continue this policy for video visits after the virus is gone.
- <sup>8</sup> Interprofessional consult CPT codes are 99446-99449, 99451 and 99452. See K O'Connor, "How to Get Paid for Remote Interprofessional Consultation between Physicians," Nixon Law Group, LLC, November 8, 2018, <https://www.nixonlawgroup.com/nlg-blog/reimbursement-interprofessional-internet-consultations-new-cpt-codes>.
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- <sup>13</sup> W Kramer & S Gremminger, "COVID-19 Policy & Politics: Employers Take a Leadership Role," *PBGH* web site, April 23, 2020, accessed June 14, 2020, <https://www.pbgh.org/news-and-publications/pbgh-blog/569-covid-19-policy-a-politics-employers-take-a-leadership-role>.
- <sup>14</sup> Phone conversation with Wendy Weitzmann, Principal, Innova Group, June 5, 2020.
- <sup>15</sup> Access Medical, a Texas-based medical group with over 600 physicians that provides virtual visits and consults in six specialties across the state, uses a distributed model where physicians work from their homes.
- <sup>16</sup> During the pandemic, CMS has relaxed HIPAA guidelines for virtual visits, but this exemption will probably be removed once virus abates.
- <sup>17</sup> According to Strata Decision Technology, *op.cit.*, self-pay (uninsured) patients increased from 5% to 7.5% of hospital encounters from January to May.
- <sup>18</sup> Given the magnitude of cross-subsidization of public healthcare by private healthcare today, employer-paid health insurance is approaching a tipping point. It is possible that the short-term economic shock of the pandemic, combined with a victory by the Democratic Party in the November election, could cause a critical mass of employers to cut back expensive private coverage and support taxpayer-funded health care, either through the public exchanges or a new public program (e.g., "Medicare-for-all"). If many employers drop coverage, the entire cross-subsidization scheme will collapse, and public payers will have to increase payments to hospitals and physicians or see quality of care decline (hospital closures, physician shortages, reduced drug development, etc.). In this scenario, the long-term impact of the pandemic on hospital operating margins and physician reimbursement would be dramatic. For a discussion of this, see D Anderson & M Blaszyk, "The problem with the 'public option,'" Unpublished manuscript, January, 2020, <https://www.iahc.com/wp-content/uploads/2019/11/191111-Anderson-Blaszyk-Paper.pdf>.
- <sup>19</sup> This is the continuing story of productivity growth, where fewer staff produce more output, and it is generally welcome. Because the COVID-19 shock has caused a sudden restructuring of so many operating processes, however, there is likely to be a discontinuity in what is normally a more gradual process.
- <sup>20</sup> M Mandel & B Swanson, "The coming productivity boom: Transforming the physical economy with information," Report to the Technology CEO Council, March, 2017, <http://entropyconomics.com/wp-content/uploads/2017/03/The-Coming-Productivity-Boom-Transforming-the-Physical->

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Economy-with-Information-March-2017.pdf . Some see slow productivity growth as intrinsic to the healthcare production function – e.g., WJ Baumol, *The cost disease: Why computers get cheaper and healthcare doesn't*, New Haven: Yale University Press, 2012.

<sup>21</sup> G D'Auria, A DeSmet, C Gagnon, J Goran, D Maor & R Steele, "Reimagining the post-pandemic organization," *McKinsey Quarterly*, May, 2020, <https://www.mckinsey.com/business-functions/organization/our-insights/reimagining-the-post-pandemic-organization> .

<sup>22</sup> These values are similar those needed to seize "transient advantage" in fast-moving clinical service markets. See DG Anderson & S Weylandt, "Why health systems need a hybrid strategy and ambidextrous leadership to ensure financial sustainability," HFMA Financial Sustainability Report, February, 2020, <https://www.hfma.org/topics/financial-sustainability/article/why-health-systems-need-a-hybrid-strategy-and-ambidextrous-leade.html>.

<sup>23</sup> TJ Peters & RJ Waterman, *In Search of Excellence*. New York: Basic Books, 1982.