

Healthcare Systems and Services Practice

# Cutting through the COVID-19 surgical backlog

COVID-19 has caused the deferral of millions of elective procedures, resulting in a potential backlog of case volume.

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**The onset of COVID-19 caused some patients throughout the United States to delay their surgeries** as many hospital systems postponed nonemergent procedures. This led to a potentially large backlog of case volume. In a recent McKinsey survey of health system leaders, hospital executives said they may struggle to address this backlog given workforce availability, enhanced sanitation protocols, and reserved inpatient capacity.<sup>1</sup> Without healthcare systems recalibrating demand and capacity, patients could face long backlogs for procedures, and potentially experience higher morbidity and mortality rates.

Solutions may include 1) reducing the unnecessary deferral of care, 2) effectively addressing new throughput challenges, 3) using advanced analytics to better forecast demand and manage capacity in real time, and 4) reimagining operating room operations to increase long-term capacity.

**The United States is likely developing a nationwide backlog of millions of surgeries.**

The COVID-19 pandemic caused hospitals and physician practices across the United States to temporarily halt nonemergent procedures, often referred to as “elective,” to limit potential spread of the disease while preserving hospital capacity and resources. In the summer of 2020, many providers in some parts of the United States, such as Texas and Florida, resumed elective care, but also had to intermittently stop and start elective procedures due to fluctuations in the local prevalence of COVID-19 and state policies on providing elective care.<sup>2-4</sup> In addition, emergency department visits declined

by more than 40 percent in April compared to 2019, which may have led to fewer patients presenting with indications for surgical intervention.<sup>5</sup> The financial impact of this reduction in elective procedure volume, which typically drives a disproportionate share of revenue and margin for hospitals, caused an estimated \$200 billion in financial losses for hospitals and health systems between March and June 2020, before accounting for relief funds.<sup>6</sup>

The deferral of elective surgical care likely resulted in a significant backlog of future patient demand, even if some of the deferred cases are never rescheduled. A May 2020 study of orthopedic surgery volumes by the *Journal of Bone and Joint Surgery* suggested that even under the most optimistic scenario, the United States may face a cumulative backlog of more than a million total joint and spine surgery cases by mid-2022, and that the country may need up to 16 months to work through the backlog of orthopedic care.<sup>7</sup> In addition, an analysis of cataract surgery volumes by the *Journal of Cataract & Refractive Surgery* estimated the United States may face a backlog of 1.1 million to 1.6 million cataract procedures by 2022.<sup>8</sup> While a recent report revealed the relative volumes of outpatient office visits (including telemedicine visits) were within 10 percent of historical levels by late July for some specialties (for example, dermatology, primary care, ophthalmology), several surgical specialties still remained more than 10 percent below historical levels for ambulatory visits (for example, orthopedics, otolaryngology).<sup>9</sup> Ultimately, the defer-

<sup>1</sup> From July 20 to July 25, 2020, McKinsey surveyed strategic and operational leaders from 25 of the country's largest private sector hospital systems to see how COVID-19 had impacted surgical operations, and to understand what expectations and implications were for the upcoming year(s). All of the 25 respondents represented systems with more than 1,200 hospital beds and seven of the respondents represented hospital systems with more than 10,000 beds. These 25 systems represented hospitals from all regions of the United States (Northeast, Midwest, South, and West). All survey questions were based on systemwide experiences and expectations and did not represent the experiences of any individual facility.

<sup>2</sup> Platoff E, “Texas bans elective surgeries in more than 100 counties as coronavirus hospitalizations keep climbing,” *The Texas Tribune*, July 9, 2020, [texas Tribune](https://www.texastribune.org).org.

<sup>3</sup> Miller N, “HCA hospitals in Central Florida halt elective surgeries again,” *Orlando Sentinel*, July 14, 2020, [orlandosentinel.com](https://www.orlandosentinel.com).

<sup>4</sup> Chang D and Conarck B, “South Florida hospitals, facing financial gap, restart surgeries as COVID cases drop,” *Miami Herald*, August 19, 2020.

<sup>5</sup> Hartnett KP et al., “Impact of the COVID-19 pandemic on emergency department visits—United States, January 1, 2019–May 30, 2020,” *Morbidity and Mortality Weekly Report*, 2020, Volume 69, pp. 699–704, [cdc.gov](https://www.cdc.gov).

<sup>6</sup> “Hospitals and health systems continue to face unprecedented financial challenges due to COVID-19,” American Hospital Association, June 2020, [aha.org](https://www.aha.org).

<sup>7</sup> Jain A, Jain P, and Aggarwal S, “SARS-CoV-2 impact on elective orthopaedic surgery” *The Journal of Bone and Joint Surgery*, July 2020, Volume 102, Number 13, p. e68, [jbjs.org](https://www.jbjs.org).

<sup>8</sup> Aggarwal S, Jain P, and Jain A, “COVID-19 and cataract surgery backlog in Medicare beneficiaries,” *Journal of Cataract & Refractive Surgery*, July 2020, [journals.lww.com](https://www.journals.lww.com).

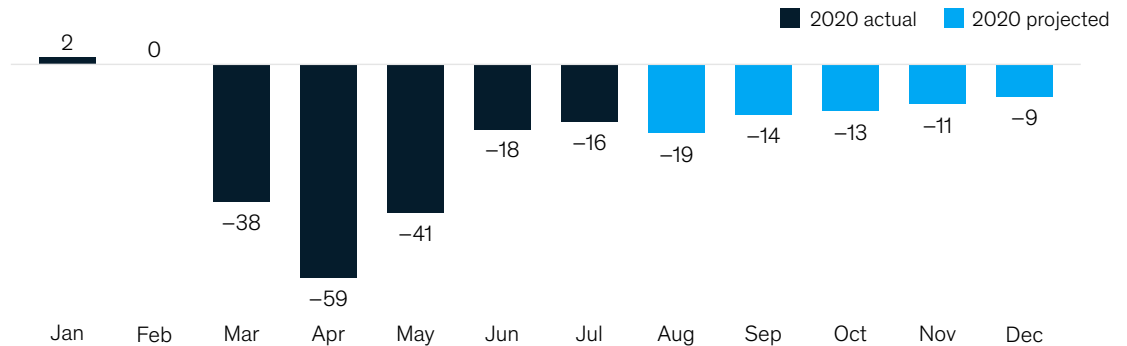
<sup>9</sup> Mehrotra A et al., “The Impact of the COVID-19 pandemic on outpatient visits: Changing patterns of care in the newest COVID-19 hot spots” The Commonwealth Fund, August 13, 2020, [commonwealthfund.org](https://www.commonwealthfund.org).

EXHIBIT 1

**On average, US hospitals saw a ~35% decrease in OR volumes from March–July and expect to remain below baseline for the rest of 2020.**

**Completed OR cases (inpatient and outpatient) for 2020 compared with 2019 baseline**

% of 2019 volume<sup>1,2</sup>



OR, operating room.

<sup>1</sup> Q5: When comparing 2019 to 2020, what percentage change in operating room surgeries (inpatient and outpatient) did your system perform in 2020 compared to the same month in 2019? (eg, 70% decrease in procedures in April 2020 compared to April 2019).

<sup>2</sup> Q8: What percentage change in operating room surgeries (inpatient and outpatient) do you expect your system to see for the remainder of 2020 compared to the same month in 2019? (eg, 40% decrease in volume compared to the same month in 2019).

Source: McKinsey survey of 25 large US hospital systems (>1,200 inpatient beds)

ral of millions of elective procedures could have a potentially deadly impact on patients.<sup>10</sup>

In order to assess the impact of decreased surgical care across the country, McKinsey surveyed 25 US hospital systems in July 2020. These hospital systems collectively represent around 25 percent of all hospital beds in the United States. The findings revealed that US providers surveyed saw a roughly 35 percent decrease in surgical volumes from March 2020 to July 2020 compared to the year prior, and on average expect to remain below historical volumes for the remainder of 2020 (Exhibit 1),<sup>11,12</sup> Based on respondents' projections for the remainder of 2020, hospitals could end the year with operating room volumes at around 20 percent below the previous year, equivalent to around 2.5 months of historical volume.

Reported decreases in surgical volume were not uniform. We believe that several factors influenced the degree of volume contraction:

- **Specialty mix:** Respondents reported that orthopedic surgery, otolaryngology, and plastic surgery represented the largest relative declines among surgical specialties.<sup>13</sup> Hospitals and outpatient surgery center respondents that said they relied more on that volume mix were harder hit financially than their peers.
- **Regional differences:** On average, providers with hospitals in the South and West expected to see the greatest decrease in volumes for the remainder of 2020, potentially due to the higher prevalence of COVID-19 in these communities at the time of the survey.<sup>14</sup>

<sup>10</sup> Glionna JM, "Avoiding care during the pandemic could mean life or death" Kaiser Health News, July 31, 2020, khn.org.

<sup>11</sup> Q5: When comparing 2019 to 2020, what percentage change in operating room surgeries (inpatient and outpatient) did your system perform in 2020 compared to the same month in 2019? Responses for January through July 2020 (month to date).

<sup>12</sup> Q8: What percentage change in operating room surgeries (inpatient and outpatient) do you expect your system to see for the remainder of 2020 compared to the same month in 2019? Responses for August through December 2020.

<sup>13</sup> Q6: For the months of March–June 2020, which specialties saw the greatest decrease in surgical volume compared to the prior year? Please rank in order from greatest reduction to least reduction. Option choices include: orthopedic, spine, neurosurgery, cardiovascular, general surgery, ENT, GYN, plastic surgery.

<sup>14</sup> Q4: In which region(s) of the United States does your system have hospitals (select all that apply): Northeast (ME, VT, NH, MA, NY, RI, CT, NJ, PA), South (TX, OK, AR, LA, MS, AL, GA, FL, SC, NC, TN, KY, VA, WV, DC, MD, DE), Midwest (OH, MI, IN, IL, WI, MN, IA, MO, ND, SD, NE, KS), West (CA, OR, WA, NV, ID, UT, MT, WY, CO, AZ, NM, AK, HI).

- **Facility size:** On average, hospital systems with more than 5,000 beds reported a greater relative decrease in surgical volumes from March to July (–42 percent) compared with systems with less than 5,000 beds (–25 percent), and, on average, anticipated surgical volumes would remain lower for the rest of 2020 (–20 percent and –1 percent, respectively).<sup>15</sup> Some potential reasons could include larger systems possibly located in areas with higher rates of COVID-19 or perhaps larger systems that were more likely to broadly restrict elective care across geographies despite differing disease burdens locally.
- **System posture:** While most systems continued to report procedural volume decreases in June and July, 24 percent reported volumes actually *increased* above 2019 levels during these two months as the hospitals worked through the original procedural backlog.<sup>16,17</sup> Many of these respondents overlap in geographies with other respondents that experienced volume declines during these same periods, suggesting other factors (for example, patient outreach, physician relationships, hospital operations) were at play.

Almost universally, respondents reported that they expected surgical volumes to be below historic levels for the rest of 2020.

**New challenges of operating in a COVID-19 environment are likely limiting hospital efficiency and effective capacity, perhaps contributing further to a future backlog.**

Hospitals and physician practices began new safety protocols in recent months, and many of those are likely to persist for months or years to come. Due to the new challenges of operating in a COVID-19 environment (for example, increased sanitation measures and reserved inpatient bed capacity), around 40 percent of

hospital systems surveyed do not believe they would be able to return to historical procedural throughput levels even if demand increased to previous levels or higher.<sup>18</sup> Providers report that workforce shortages, inpatient bed availability, and operating room capacity are the most common barriers to increasing surgical throughput (Exhibit 2).<sup>19</sup>

While challenges vary across providers, we predict that nearly all hospitals are likely to face multiple novel challenges at the same time for the foreseeable future. The most frequently cited challenge for the upcoming months is that hospital workforces may not be stable. This instability is related to, among other factors, postponed paid time off, ongoing childcare needs, the potential for COVID-19 infections among staff, and provider burnout. Another key challenge is that many hospitals are reserving inpatient beds for potential COVID-19 surges. Collectively, these and other challenges outlined in Exhibit 2 are expected to negatively impact many hospitals' procedural capacity, as well as add incremental operating expenses.

**The combination of this surgical backlog paired with reduced effective hospital capacity could impact both providers and patients for years to come.**

What will happen to the healthcare system when millions of procedures are expected to be deferred in 2020? While some patients may ultimately decide to seek alternatives to surgical care or have symptoms resolve before seeking care altogether, survey respondents said they expected around 80 percent of deferred procedural care to ultimately result in cases (for example, when patients report that they feel more comfortable returning to hospitals, or when a vaccine or effective therapeutic is widely available).<sup>20</sup> Using this estimate, there may be two months

<sup>15</sup> Q2: Number of hospital beds across entire system.

<sup>16</sup> Q5: When comparing 2019 to 2020, what percentage change in operating room surgeries (inpatient and outpatient) did your system perform in 2020 compared to the same month in 2019? Responses for January through July 2020 (month to date).

<sup>17</sup> Q8: What percentage change in operating room surgeries (inpatient and outpatient) do you expect your system to see for the remainder of 2020 compared to the same month in 2019? Responses for August through December 2020.

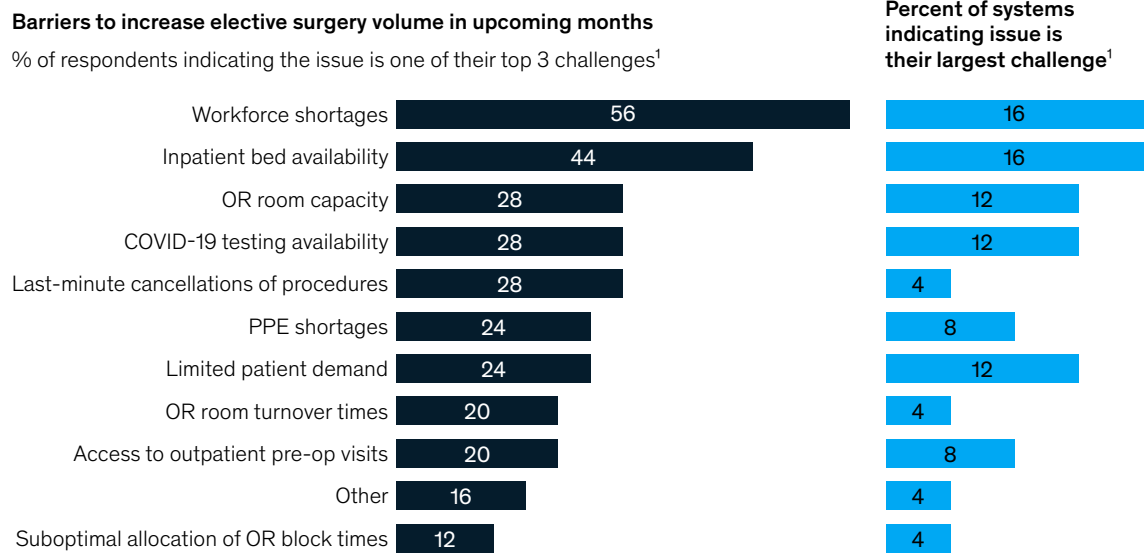
<sup>18</sup> Q9: If patient demand were unlimited, what is the highest operating room volumes (as a % of historical volume) your system could achieve and sustain for 12 months in the current COVID environment?

<sup>19</sup> Q13: What are the top 3 challenges your system may face in trying to increase elective surgery volume in the upcoming months?

<sup>20</sup> Q10: Of the elective surgeries that were postponed from March to June, what percentage of patients do you think will need to reschedule their care at some point in the next 5 years?

EXHIBIT 2

**Several barriers exist to increase surgery volumes, but workforce shortages, IP bed availability, and OR capacity are most common.**



IP, inpatient; PPE, personal protective equipment; OR, operating room.  
<sup>1</sup> Q13: What are the top 3 challenges your system may face in trying to increase elective surgery volume in the upcoming months?  
 Source: McKinsey survey of 25 large US hospital systems (>1,200 inpatient beds)

or more of excess surgical demand across the United States by the end of 2020. For the United States to work through two months of excess surgical demand in less than one year, it would require hospitals across the country, on average, to operate at 120 percent of historical volumes for ten straight months (Exhibit 3). However, this type of throughput increase is unlikely, as less than 50 percent of systems reported they would be able to increase volumes significantly above their historical baselines largely due to limited provider capacity.<sup>21</sup> As such, a more realistic scenario is if health systems were to instead operate at an average 10 percent increase above baseline volumes; in this case, around 20 months would be required to work through the pent-up demand from 2020.

The continued deferral of care in 2021 and beyond, and/or ongoing challenges with

hospital capacity, could further exacerbate the backlog of procedural cases. The potential result may be that patients may face long wait times for surgical care. Studies have shown that delays in surgical care for osteoarthritis can result in progressive loss of mobility and health-related quality of life, and patients living with knee osteoarthritis have a higher risk of death compared with the general population, with increasing risk as walking disabilities become more severe.<sup>22,23</sup> In addition to a potential impact on morbidity or mortality, delays in care could also lead to worse patient experience. Given that some types of “elective” procedures are more time sensitive than others, providers may need to determine how to prioritize care provided based on the urgency of care required, and whether delayed care could increase morbidity or mortality.

<sup>21</sup> Q9: If patient demand were unlimited, what is the highest operating room volumes (as a % of historical volume) your system could achieve and sustain for 12 months in the current COVID environment?  
<sup>22</sup> Hart A et al., “Comparison of US and Canadian perioperative outcomes and hospital efficiency after total hip and knee arthroplasty,” *JAMA Surgery*, 2015, Volume 150, Number 10, pp. 990–8, jamanetwork.com.  
<sup>23</sup> Nüesch E et al., “All cause and disease specific mortality in patients with knee or hip osteoarthritis: population based cohort study,” *BMJ*, March 8, 2011, Volume 342, d1165, bmj.com.



**To proactively address the expected COVID-19 surgical backlog, systems would need to instill patient confidence in the near term. They also could consider optimizing the use of existing capacity, and will need to reimagine clinical operations to become significantly more efficient.**

The root cause of the elective procedure backlog is likely due to a temporal mismatch between supply and demand. This mismatch could result in excess hospital capacity (and worsening financial performance) as patients defer care, and excess demand in the future as patients return to facilities. As patients continue to report an increasing comfort in returning to in-person care, respondents report a variety of strategies (Exhibit 4) to address or prepare for a potential increase in demand.<sup>24</sup>

Since building additional operating rooms may not be practical for most systems given the capital costs, physical space, and associated workforce required, systems that are able to increase effective capacity by optimizing existing space will be able to perform better in this challenging environment. Around 80 percent of provider systems surveyed believed they could increase market share in the coming year given the

changes in the market dynamics.<sup>25</sup> However, it is possible that many systems may experience a long-lasting decrease in market share if they are not able to increase throughput to the same levels as other providers in their local market. Systems that are able to react quickly to fluctuating market demand may be better positioned to excel in the coming years. Given the importance of surgical care on the health of patients and the financial health of hospital systems, operators will need a robust strategic and operational plan to manage the many new complexities and effectively improve patient throughput.

**Key actions that health systems could take include:**

- 1. Proactively engage patients and providers to instill confidence and reduce unnecessary deferral of care.** Given low volume levels, it will be important to instill patient confidence in advance of the availability of a vaccine or effective therapeutic. According to the McKinsey's Consumer Health Insights Survey, patients stated that providers actively contacting them would make the greatest difference in rescheduling their care sooner rather than later.<sup>26</sup> Systems that are able to do this effectively will likely be able to return

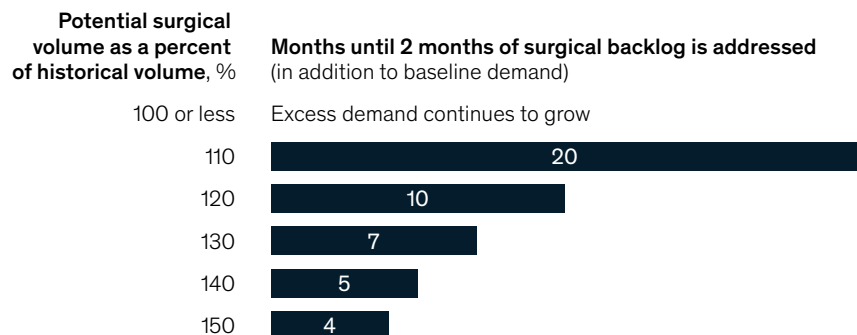
<sup>24</sup> McKinsey Healthcare COVID-19 Consumer Insights, July 14, 2020.

<sup>25</sup> Q20: Do you believe your system has the ability to increase surgical market share in the upcoming year due to changes in the healthcare landscape?

<sup>26</sup> McKinsey Healthcare COVID-19 Consumer Insights, June 8, 2020.

EXHIBIT 3

**It may take up to two years for providers to work through the surgical backlog if they could operate at 10–20% above historical levels.**



Source: McKinsey survey of 25 large US hospital systems (>1,200 inpatient beds)

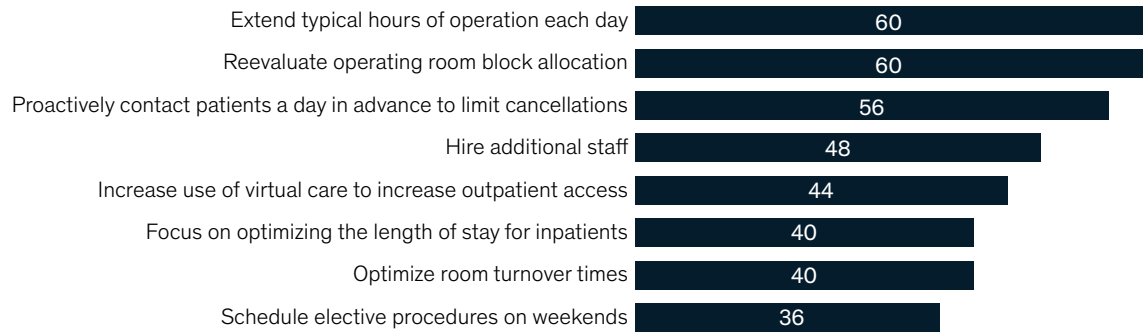
EXHIBIT 4

**Many actions are being taken to increase surgical throughput in the near term, such as extending hours of operation.**

Actions hospital systems are taking to increase surgical throughput

**Planned near-term action (next 3 months)**

% of respondents<sup>1</sup>



<sup>1</sup> Q14: What actions is your system planning to take in the near term (i.e., next 3 months) to increase operating room utilization?  
Source: McKinsey survey of 25 large US hospital systems (>1,200 inpatient beds)

to baseline volumes sooner and will be better equipped to care for a broader patient population as long as additional capacity remains. Example tactics to do this effectively include identifying patients via advanced analytics who have potentially delayed care, using tailored digital capabilities to communicate with patients about enhanced safety measures and protocols in place, and engaging them via virtual care channels. In addition, if capacity remains a challenge, systems may need to invest further in alternative treatments to surgery (for example, physical therapy), either as a temporal or long-term measure. Alternative treatments could potentially keep a patient stable while maintaining a close relationship while he/she awaits surgical care.

- 2. **Increase effective capacity now to optimize use of existing resources.** While it may not be practical to build additional operating rooms in the near term, hospital operators can take many approaches to

quickly increase surgical patient throughput while maintaining a high level of patient safety. Of the leaders surveyed, all indicated that they were implementing multiple measures, with extended operating room hours being the most common, in the near term to increase surgical throughput (Exhibit 4).<sup>27</sup> Interestingly, while around 40 percent of hospital systems no longer believe they could reach 100 percent of historical volumes given new COVID-19 challenges, less than 50 percent of systems are pursuing most levers to increase effective capacity (for example, only 36 percent of systems are planning to schedule cases on the weekend).<sup>28,29</sup> While many of these tactics have associated costs (for example, extended or weekend hours), others do not (for example, optimized operating room block time allocation to ensure all operating room time dedicated to specific specialties or physicians is fully utilized). As such, now is the ideal time for hospitals to perform a holistic assessment of oppor-

<sup>27</sup> Q14: What actions is your system planning to take in the near-term (i.e., next 3 months) to increase operating room utilization?

<sup>28</sup> Q9: If patient demand were unlimited, what is the highest operating room volumes (as a % of historical volume) your system could achieve and sustain for 12 months in the current COVID environment?

<sup>29</sup> Q14: What actions is your system planning to take in the near term (i.e., next 3 months) to increase operating room utilization?

tunities to improve procedural throughput and revisit traditionally challenging topics, such as standardizing effective block allocation policies or scheduling procedures during evenings and weekends.

3. **Utilize advanced analytics to forecast potential patient demand and manage real-time system capacity**, enabling

more agility in the response to fluctuating volumes. As we discussed in “Preparing for the next normal now: How health systems can adopt a growth transformation in the COVID-19 world,”<sup>30</sup> hospital systems have faced unprecedented challenges during the COVID-19 pandemic. The uncertainty of what the coming months will bring has hamstrung leaders as they develop strategic and operational plans for the future. While most systems reported confidence in their ability to monitor the pandemic as it evolves, much less certainty exists around potential future volumes, as less than 50 percent of leaders are confident in their ability to predict surgical volumes more than one month in the future.<sup>31</sup> As the number of new COVID-19 cases continues to fluctuate in communities across the United States, leaders who are able to accurately predict demand in the coming months and years will be best equipped with strategic and operational plans that enable them to better match supply and demand in real time across acute and ambulatory assets. Predicting demand accurately could allow them to outperform peers.

4. **Reimagine operating room and inpatient throughput to transform operational efficiency**. While shorter-term solutions may help increase throughput for a period of time, they may not be sustainable for the long term. Ultimately, systems can either add *actual* capacity by increasing hours of operation or opening

up new physical space, or they could add *effective* capacity by using their existing space more efficiently. To do the latter, systems will need to reimagine and transform existing processes through the use of advanced analytics and new technologies. Only a small percentage of respondents reported plans to truly transform their operating room operations over the next 12 months. For example, 16 percent of respondents said they were dedicating resources to improve perioperative analytical capabilities and 12 percent were using technology to reimagine the operating room experience for patients and providers.<sup>32</sup> Systems that put together a comprehensive strategy to address patient and provider needs (for example, comfort with sanitation protocols, automation to address workforce shortages), increase throughput through decision-based changes (for example, hours of operation), optimize utilization across inpatient and outpatient surgical facilities, and invest in newer operating room capabilities (for example, an AI-backed algorithm to predict case lengths and allocate block times) will be most likely to capitalize on this opportunity and outperform in the long term (Exhibit 5).

While providers have seen a significant decrease in surgical volumes due to COVID-19, continued challenges are expected to keep volumes below baseline for months to come, resulting in a potentially lengthy backlog of deferred procedures that will need to be quickly addressed in the future to mitigate negative patient impact. If the presence of COVID-19 continues to oscillate, providers will need to focus on significantly increasing throughput when COVID-19 prevalence in the community is temporarily low to counteract times when they may be forced to reduce elective capacity. The abilities to engage patients and providers to reduce unnecessary

<sup>30</sup> Malani R, Revenig L, Santo T, and White M, “Preparing for the next normal now: How health systems can adopt a growth transformation in the COVID-19 world,” August 21, 2020, McKinsey.com.

<sup>31</sup> Q18: In current state, how far in advance is your system able to accurately predict (within 10% of actual) future surgical volumes? Q19: How would you rate your system’s ability to leverage epidemiologic data to predict inpatient COVID demand for the next 2 months?

<sup>32</sup> Q16: What actions is your system planning to take in the medium-term (i.e., next 12 months) to increase operating room utilization?



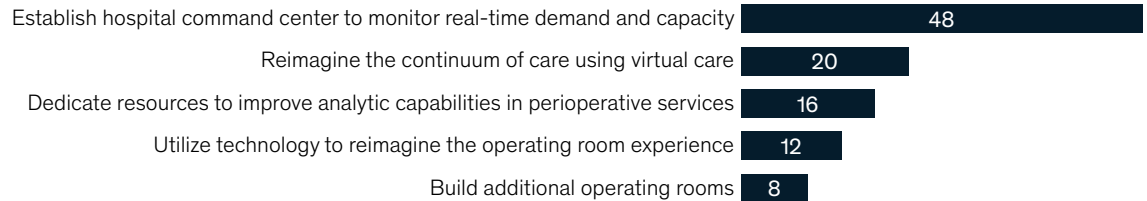
EXHIBIT 5

## Most systems are not planning to reimagine clinical operations in the next 12 months to increase surgical throughput.

Actions hospital systems are taking to reimagine clinical operations and increase surgical throughput

### Planned medium-term action (next 12 months)

% of respondents<sup>1</sup>



<sup>1</sup> Q16: What actions is your system planning to take in the medium term (eg, next 12 months) to increase operating room utilization?

(Select all that apply and rank in order of importance.)

Source: McKinsey survey of 25 large US hospital (>1,200 inpatient beds) systems

deferrals of care, react quickly to increase surgical throughput when COVID-19 activity is low, and efficiently manage capacity through the use of digital and analytic capabilities represent new muscles that provider systems will need to strengthen in the coming months and years if they aspire to recapture and grow surgical volumes while ensuring timely access for patients in need of care.

Without robust strategic and operational plans in place, both providers and patients could face adverse outcomes in the months and years to come due to the COVID-19 pandemic. However, providers could use the pandemic as a catalyst to strengthen clinical operations, enable growth, and transform care delivery to improve patient experience and outcomes in the future.

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The authors would like to thank Meredith Lapointe and Joanna Wexler for their contributions to this article. They would also like to extend a heartfelt "thank-you" to all caregivers on the front lines who are caring for our patients and communities during this time.

This article was edited by Elizabeth Newman, an executive editor in the Chicago office.

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