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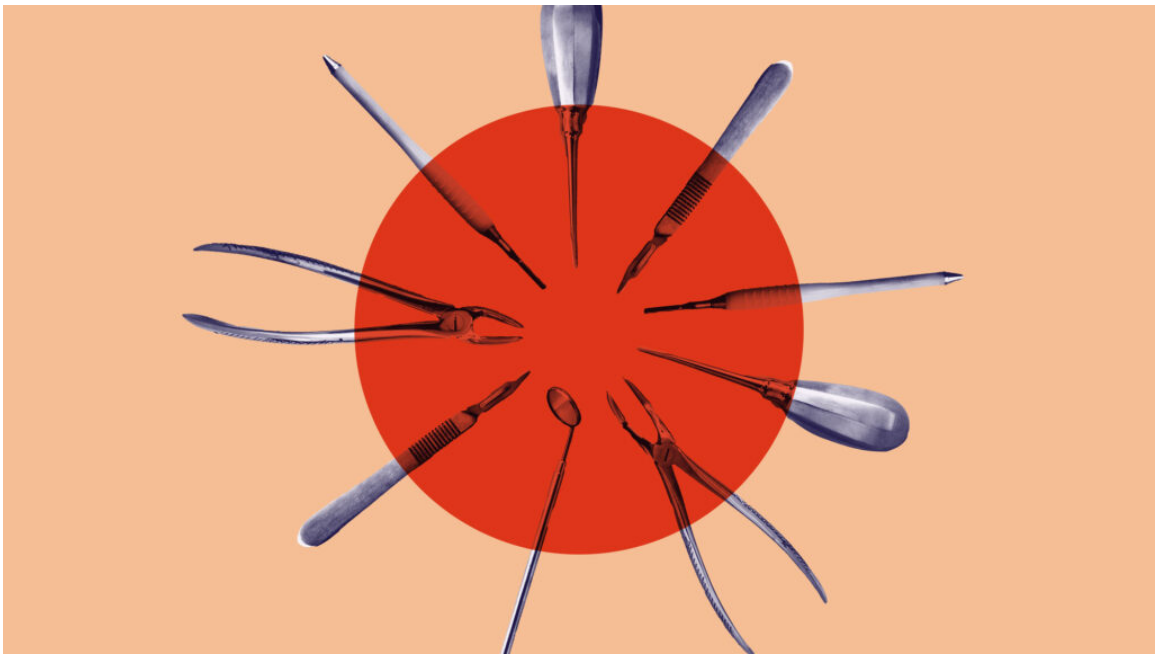

HBR STAFF/PEXELS

Covid-19 has exposed vulnerabilities in health care systems across the United States and world. To reduce infectious risk to patients and providers, and conserve critical resources — such as personal protective equipment (PPE), ventilators, and intensive care (ICU) beds — most states in the U.S. enacted a temporary ban on elective surgery from March through May 2020.

The ban has resulted in a backlog of uncompleted procedures that had been scheduled over this three-month period, as well as a dynamic backlog of surgeries that continue to be delayed as the health system experiences diminished capacity. The problem is that the "elective" in elective surgery is largely a misnomer, serving only to distinguish between emergent care and non-emergent care. While "elective" implies optional, most elective surgical cases fall somewhere between vital preventative measures (e.g. screening colonoscopy) and essential surgery (e.g. cataract removal). Ample literature across surgical specialties demonstrates worse patient outcomes and higher costs when these treatments are delayed.

Together, these factors have resulted in an astounding number of patients failing to receive the medical attention they need. (One recent study predicts that the post-pandemic backlog will exceed one million cases for spinal fusions and joint replacements in the field of orthopaedic surgery alone.) This anticipated demand in combination with health providers' decreased capacity will likely result in creation of wait lists and potentially worsened health impacts on patients.

Effectively Restarting Elective Surgery

Now that most states have lifted restrictions on elective surgery, hospital leaders across the country have been rushing to implement ramp up strategies. Covid-19 exposed that healthcare systems have been largely unprepared to deal with this shut down and ramp-up. In addition to addressing the growing patient backlog, the motivation to restart elective surgery includes tempering revenue shock from decreased surgical volume, a substantial contributor to the margin of hospitals and medical centers. In fact, deferment of medical care has a broader impact on the national economy, as approximately half of the annualized 4.8% U.S. GDP decline in the first quarter of 2020 is attributed to health care services, especially delayed elective procedures.

While there are many good reasons to ramp back up quickly, it is important that speed does not overtake strategy. Restarting elective surgery haphazardly may result in unintended consequences. Ambiguous policies and procedures for scheduling and distributing resources across elective surgical cases can create bottlenecks that impede overall hospital operations. Ramp up strategies that do not prioritize equitable access to care may inadvertently favor patients with socioeconomic privilege, reinforcing existing disparities in access and quality. For example, racial and ethnic minority patients have historically had lower rates of elective operations such as knee replacement and the Covid-19 pandemic may result in further reduction in access to health care for minorities and socioeconomically disadvantaged groups.

As clinicians and health care leaders work to address the backlog and treat new patients in ways that are consistent with the clinical, financial, and ethical goals of their organizations, they need a more systematic approach. Developing this approach now is beneficial for the current state of health care and may be beneficial in potential future surgical suspensions as well.

Here we suggest five strategies that health care leaders can employ today to meet their clinical objectives, while aiming for better operational efficiency and equity in access to care:

Develop consistent, transparent, and bias-aware algorithms for surgical prioritization. Since elective surgeries were given the green light to proceed in May of this year (though some states are reversing course on this decision), most health systems have introduced broad, rudimentary guidelines for surgical prioritization. However, the prioritization decision in many cases is left to individual surgeons or a small group of health leaders who use their personal heuristics or preferences for decision making. A consistent and transparent prioritization framework has generally been missing from these efforts.

To address their growing backlog, a gold-rush mentality has emerged among surgeons and surgical groups who are vying for operating room (OR) blocks based on "first-come, first-served" and "loudest voice wins" methods. This mentality can unfortunately lead to tribalism among different surgical specialties, with each group trying to expand their footprint and claim more surgical resources (e.g., OR time, surgical beds, and ICU beds). This local-optimization approach is not in the best interests of the health systems and may put patients of less vocal surgeons at risk.

A prioritization framework that is ethics-driven and takes into account the values of multiple stakeholders is necessary to maximize patient benefit and minimize Covid-19 exposure. One potential silver lining of Covid-19 has been a growing acceptance among clinicians and health care leaders of digital transformation. This change in attitude may help facilitate algorithmic approaches to surgical prioritization.

There are already algorithms being developed to auto-prioritize patients in real-time. For example, one such prioritization algorithm, being developed through work at Johns Hopkins Medicine and the Hopkins Business of Health Initiative, is inspired by multi-criterion decision analysis and considers three types of factors: surgical risk factors (e.g., patient age, surgical urgency), capacity requirement factors (e.g., OR time, PPE consumption, ICU bed requirements), and Covid-19 risk factors (e.g., Covid-19 status, case transmission risk, and Covid-19-specific comorbidities), in order to provide consistent, systematic prioritization decisions among the population of patients in need of elective surgery.

Of course, such algorithms must be keenly aware of potential biases to ensure they narrow, rather than widen, existing disparities in access to care across patient groups. Regardless of the specific algorithm adopted, these tools will need to be transparent, consistent, and bias-aware.

Expand surgical capacity by transitioning to outpatient care. Transitioning care from historically inpatient to outpatient settings may aid in expanding surgical capacity through decentralization of care from hospitals to less-intensive care centers or physician office settings. These lower-acuity outpatient settings may increase patient throughput and result in streamlined and focused care given the capacity-constrained, resource-intensive hospital setting.

Fields such as ophthalmology and dermatological surgery have long embraced this strategy and done so successfully. For instance, dermatologists treating skin cancer are able to perform Mohs

micrographic surgery — which combines tumor removal, complete margin evaluation using frozen section histopathology, and advance reconstruction techniques — all in one visit using local anesthesia in an outpatient office suite. Covid-19 has illustrated the value for more traditionally hospital-anchored surgical specialties to venture into these spaces for lower-acuity cases.

Accomplishing this shift would require lobbying state legislators to waive certificate-of-need requirements that have been historical roadblocks in the use of ambulatory surgery centers (ASCs). Further, health systems are frequently reimbursed by insurance companies at higher rates for the same patient care delivered in a hospital vs. in an ASC. Renegotiating contracts to achieve better rates in the ASC setting may both boost the health systems' financial viability and provide improved access for patients.

Form dedicated teams to improve operating room efficiency. A patient does not expect to have their hernia repair performed by their orthopaedic surgeon. Yet, when it comes to the surgical staff, specifically OR nurses and surgical technicians, the same care team members often work on cases covering a variety of surgical specialties. Frequently, the expectation from the hospital and surgical leadership is that staff should cross-train to work interchangeably with a diverse range of surgical teams. Though intended to pool limited resources and ease staffing constraints, these traditional models can generate significant inefficiency within the OR. A particular surgical technician may not be as familiar with a given surgery and thus hinder surgical efficiency compared to a seasoned technician who is experienced in the same type of surgery. This lack of familiarity and pressure to "master-it-all" may also increase the risk of error.

In response to revenue losses from Covid-19, hospitals leaders may be tempted to cut their workforce and focus on cross-training and deploying a smaller pool of staff more broadly. Yet, in light of the operational challenges post-pandemic, doing so may prove self-handicapping as hospitals move forward. Substantial research shows dedicated OR teams helps increase throughput, lower error rates, reduce waste, and improve satisfaction among team members. Strengthening dedicated teams can help hospitals achieve a speedy recovery to pre-pandemic efficiency levels.

Think beyond the traditional five-day work week. Disease progression does not pause on the weekends. Yet, most hospitals run ORs only from Monday through Friday, reserving weekends slots for emergencies. The obvious rationale for this is workforce scheduling. However, expanding scheduling can improve equitable access for patients, especially those struggling to take time off work for their elective surgery, and flexibility for staff who may be facing challenges with childcare or other responsibilities at home.

As surgery restarts in the wake of Covid-19, it is clear that OR slots are a major bottleneck. A "quick win" for many hospitals working through their elective surgical backlog would be to expand access to OR time on the weekends. Expansion does not mean that any given surgeon or perioperative team member works seven days a week, but that providers and patients are allowed the flexibility of performing surgical cases on the weekends. In addition to immediately expanding operating room

capacity and increasing equity in access to care, this solution will decompress the weekday schedule and allow for better social distancing.

Focus on simplifying patients' surgical care experience. Ultimately, the prime focus of healthcare ought to be improving patients' quality of life. Unfortunately, the pandemic has resulted in significant fear of catching the virus by going to the hospital, leading many patients to avoid seeking health care. Health care leaders ought to design strategies that make patients' lives easier such that seeking care does not feel like an undue burden. For instance, telemedicine has expanded substantially in response to the pandemic and has proven to be a powerful means to connect with patients and families. Even as clinics start to reopen, we should continue to leverage telemedicine for preoperative counseling and clearance to continue to offer the incredible convenience it entails.

At the same time, an unfortunate consequence of the pandemic has been increased unemployment amid the economic downturn. Historically, a major problem in health care has been price opacity. Patients frequently have to jump through multiple hoops to get an estimate of out-of-pocket cost. While not all aspects of cost are predictable, simplifying this process to provide median expected out-of-pocket costs with confidence intervals may instill confidence and allow for better planning for patients and families.

One strategy that may improve patient experience is to deploy dedicated surgical navigators employed by the health system who help patients with logistical planning and provide critical financial and clinical information. This individual could assist with preoperative appointments and requisite workup including Covid-19 testing, telemedicine logistics, day-of-surgery arrival and drop-off details, and postoperative care coordination. Thinking carefully about the patient experience and designing strategies to ease some of these challenges can go a long way in increasing patient care outcomes and satisfaction.

The disruptions due to Covid-19 provide an opportunity to rethink many aspects of health care. To avoid a haphazard ramp-up and address the large surgical backlog, it is important to adopt strategies that are operationally efficient and ethically sound. Certainly, these issues are multifaceted, and require solutions that draw from multiple stakeholder communities and disciplines. We are optimistic that a dedicated community of professionals can come together to address these challenges and restore high-quality surgical care to those in need.

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