Approaching Surgical Triage During the COVID-19 Pandemic

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The COVID-19 pandemic has drastically changed surgical prioritization in the United States and worldwide. Patients with time-sensitive surgical conditions or tumors have been prioritised, whereas patients with surgical conditions that require less urgent management such as asymptomatic hernias or obesity have been postponed indefinitely. As the spread of COVID-19 places greater demands on health systems, further triage will be required. The American College of Surgeons has provided guidance to aid in prioritizing cases, but challenges will remain both in the current time of crisis and over the several months after the peak of the pandemic. Getting this right will be a challenge, and there are several considerations that will need to be taken into account as systems develop long-term strategies for surgical prioritization.

BEFORE THE PEAK OF THE PANDEMIC

Surgical systems that have not deferred nonurgent operations may be too late to mount the necessary response to COVID-19. Even those that have postponed these cases should be prepared for the impact of the pandemic to escalate sharply with little time to adapt. With the initial spread of COVID-19 into North America, the American College of Surgeons (ACS) was quick to recommend the suspension of all elective surgery before the need hit. The adoption of these recommendations was not immediate nor was it complete. The harm caused by failure to modify the surgery schedule has been clearly demonstrated in countries like China where ongoing elective operations and nonessential clinic visits contributed to early rates of in-hospital COVID-19 transmission; and from Italy where resources consumed through elective surgery including personal protective equipment left health care workers vulnerable when the pandemic crested. Empty operating rooms and inpatient beds before the peak of the pandemic are necessary preparation to ensure that hospitals are not crippled by a large volume of critically ill patients presenting within a short timeframe.

Lifesaving operations should be prioritized with a clear plan to move to triage based on quality of life years attainable if resources become scarce. Prioritizing cases that are immediately or urgently lifesaving offers the greatest benefit for lives saved during crisis and is the current form of triage undertaken across most of the United States and Canada. Under extreme circumstances, triage shifts to consider prioritizing patients for whom the greatest number of quality life years can be salvaged. This form of triage has been enacted in Italian critical care units, where patients most likely to recover have been prioritized over the sickest. Other hospitals in the Unites States and Canada have developed similar frameworks to consider adopting “Crisis Standards of Care” if resources become scarce. Alternatives to surgery may also allow for operative room resource conservation but may consume other resources and contribute to patient morbidity. In making recommendations around case urgency and alternatives, the ACS has aimed to balance these risks. For example, treating appendicitis with antibiotics was suggested as an alternative to surgery. However, there was immediate backlash to this suggestion from surgeons who were concerned with the failure rate and the potential need for prolonged admissions. The concerns about these failures may be overestimated; and surgical biases can be difficult to separate from best evidence dictating best management. Antibiotics for appendicitis is first line therapy in a number of hospitals across the globe. Although nonoperative care of appendicitis may have a failure rate between 14 and 30%, the majority of patients will get out of hospital without surgery and will not consume the human and material resources that are most needed in COVID-19 management. Decision-making must balance the concerns of surgeons advocating for what they consider best management with what is most acceptable in the face of a rapidly evolving public health emergency. When feasible, nonoperative solutions that may require future operation but spare current resources should be considered. Different specialties, such as oncology, require different approaches to triage. For example, diagnostic procedures such as biopsies that offer the potential for early potently curative intervention should be prioritized as lifesaving. When considering the management of patients with operable cancers, the meaningful survival benefits achievable with optimal and timely surgery need to be weighed against the potential survival achieved with less optimal approaches including delayed surgery, radiation, and chemotherapy. Large and complex oncologic resections and transplants can consume large amounts of resources including blood and intensive care support. In situations of extreme scarcity, it is possible that centers may not be able to offer these procedures. When lifesaving operations cannot be offered because of resource scarcity, every attempt should be made to transfer patients to centers that have sufficient resources to provide necessary surgical care. The perspectives of clinical experts as well as administrative leaders are essential in balancing clinical need and operational capacity.

Recommendations for systems to consider before the peak of the pandemic:

1. Stop all nonurgent operations as soon as possible (if not already stopped) in all ambulatory and nonambulatory centers.
2. Define time-sensitive cases within each specialty following standard criteria such as those provided by the ACS. These should be centrally reviewed, aligned between specialties, and strictly enforced.
3. Define life-or-limb cases before triage based on these criteria is required.
Developing an approach to prioritization of nonurgent surgical triage during the COVID-19 pandemic

As in consuming hospitals and health systems to deal with this backlog returned to normal. The suspension of 30% of medical services when operating capacity will be variable between and within countries. The ACS has provided the groundwork for developing a surgical triage strategy for the initial stages of the COVID-19 pandemic. The tremendous burden of surgical disease that will accumulate due to delayed and cancelled operations will demand new, system-wide strategies. As with the planning for the early stages of the pandemic, preparation for this phase of the pandemic is necessary. The relief that will be eagerly anticipated by surgical systems at the end of COVID will not occur until some time after the peak of the pandemic has passed.

Recommendations for systems to consider after the peak of the pandemic:

1. Once the peak of the pandemic has passed, regularly and realistically assess the hospital systems capacity to expand surgical services.
2. Expand surgical services slowly but early.
3. Maximize capacity by transferring patients to ambulatory centers or other nearby systems that have capacity for surgery.
4. Rapidly reassess and retriage patients who have been delayed beyond the recommended timeframe.
5. Cancer cases and oncology diagnostic tests that have been delayed beyond optimal windows for treatment or have undergone less optimal alternative therapies should be prioritized.
6. Second level reprioritization should consider sustained but reversible morbidities incurred during waiting, prolonged pain, and increasing projected complexity.
7. For patients who are likely to be asymptomatic with a risk of acute deterioration (eg, infant hernias) operations can continue to be delayed with good counselling.
8. Patients that are waiting to undergo surgery without direct benefit to health (eg, minor cosmetic surgeries) should be delayed. Ambulatory centers should help to address the burden of delayed before addressing less urgent operations.
9. COVID-19 surgical care pathways and a COVID-19 Operating room will need to be maintained after the peak of the pandemic has passed as patients with COVID-19 will continue to present with conditions requiring surgery. Approaches developed during the pandemic should be integrated into hospital practices for use in future cases with high infectious transmission risks.
10. Ongoing provider support during the time of increased demand is crucial.

During the next several months, deliberate decision-making around surgical priorities will save lives. These decisions will not be made easily and will become even more challenging over time. The course of the pandemic and its impact on surgical systems will be variable between and within countries. The ACS has provided the groundwork for developing a surgical triage strategy for the initial stages of the COVID-19 pandemic. The tremendous burden of surgical disease that will accumulate due to delayed and cancelled operations will demand new, system-wide strategies. As with the planning for the early stages of the pandemic, preparation for this phase of the pandemic is necessary. The relief that will be eagerly anticipated by surgical systems at the end of COVID will not occur until some time after the peak of the pandemic has passed.

REFERENCES

1. Covid-19: Elective case triage guidelines for surgical care. Available at: https://www.facs.org/covid-19/clinical-guidance/elective-case. Accessed March 24, 2020.
2. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72, 314 cases from the Chinese Center for Disease Control and Prevention. JAMA. 2020. doi: 10.1001/jama.2020.2648. [Epub ahead of print].

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3. Rosenbaum L. Facing Covid-19 in Italy—ethics, logistics, and therapeutics on the epidemic’s front line. *New Engl J Med.* 2020.

4. Members of Harvard Medical School Center for Bioethics’ A message to the public from Mass. doctors, nurses, and ethicists about the coronavirus’ *The Boston Globe*, March 30th, 2020

5. Mahida JB, Lodwick DL, Nacion KM, et al. High failure rate of nonoperative management of acute appendicitis with an appendicolith in children. *J Pediatr Surg.* 2016;51:908–911.

6. Frazee RC, Abernathy SW, Davis M, et al. Outpatient laparoscopic appendectomy should be the standard of care for uncomplicated appendicitis. *J Trauma Acute Care Surg.* 2014;76:79–83.

7. Findlay JM, el Kafsi J, Hammer C, et al. Nonoperative management of appendicitis in adults: a systematic review and meta-analysis of randomized controlled trials. *J Am Coll Surg.* 2016;223:814–824.

8. World Health Organization. Pandemic influenza preparedness and response: a WHO guidance document. Geneva: World Health Organization; 2009.

9. Parry J. Spread of SARS slows. *BMJ.* 2003;326:1232.

10. Rebmann T, English JP, Carrico R. Disaster preparedness lessons learned and future directions for education: results from focus groups conducted at the 2006 APIC Conference. *Am J Infect Control.* 2007;35:374–381.

11. Naylor CD, Chantler C, Griffiths S. Learning from SARS in Hong Kong and Toronto. *JAMA.* 2004;291:2483–2487.