

TITLE: COVID-19 – Implications on and of Surgical Practices: Where do we draw the line?

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RUNNING HEAD: Impact of COVID-19 on Surgical Practices

SURGICAL PERSPECTIVE

As the number of individuals affected by the novel coronavirus (COVID-19) continues to increase globally, measures have been implemented to curtail the spread of the virus. In Italy, where the virus found a new epicenter following China, a lockdown was put into effect as the country's healthcare system was strained beyond maximum capacity. Other countries including Canada, France and India selectively closed their borders to foreign travel. In the United States, governors issued curfews and restrictions. On a federal level, The Centers for Disease Control and Prevention (CDC) and the White House issued guidelines and statements to avoid mass gatherings. These stringent measures came as countries observed Italy's response to the pandemic and more information became available regarding the efficient transmission of the virus, particularly among subclinical and asymptomatic individuals.¹

Within the United States, other national organizations attempted to provide guidelines for a unified approach to this pandemic. On March 13th, 2020, in an attempt to flatten the curve and prepare for an anticipated strain on the healthcare system, the American College of Surgeons issued a recommendation that *"each hospital, health system, and surgeon should thoughtfully review all scheduled elective procedures with a plan to minimize, postpone, or cancel electively scheduled operations, endoscopies, or other invasive procedures until we have passed the predicted inflection point in the exposure graph and can be confident that our health care infrastructure can support a potentially rapid and overwhelming uptick in critical patient care needs."*² To reinforce the message, U.S. Surgeon General Jerome Adams tweeted on March 14th, 2020 to consider halting elective procedures warning that every elective operation could not only spread the disease but also use up essential healthcare resources.³ In the following weeks, many institutions around the country ceased elective surgery practices including here at the University of Michigan and at Vanderbilt University Medical Center.

However, there remains some debate regarding the definition of "elective" operations. In a letter drafted by the American Hospital Association (AHA), the Association of American Medical Colleges (AAMC), the Children's Hospital Association (CHA) and the Federation of American Hospitals (FAH), these organizations bring up concerns regarding disparate definitions of "elective" and classifying levels of necessary care.⁴ In their letter, the AHA cites examples of elective operations, such as faulty heart valves and pediatric hernia repairs, which if delayed could result in life threatening complications. They recommend a case-by-case determination accounting for regional COVID-19 projections, personal protective equipment availability, procedure urgency and ultimately, sound clinical judgement. In a separate statement from the Ambulatory Surgery Center Association (ASCA), officials state that *"...[Ambulatory Surgery Centers] ASCs can continue to provide safe surgical care for patients whose condition cannot wait until hospitals return to normal operations."*⁵ In addition, *"ASCs can serve as alternative settings that provide surgical care for those patients who would suffer from a delay."*

With varying recommendations from multiple organizations, responses among hospital systems have varied significantly. For instance, several university hospitals and healthcare systems in New York and Massachusetts immediately postponed nearly all non-life-threatening surgeries until further notice. Other hospital systems around the country canceled elective outpatient surgeries such as plastic surgery procedures and joint replacement surgeries. In contrast, some private hospital systems and surgical practices have had varied responses with many continuing operations and following close adherence to CDC guidelines and recommendations.⁶

The goal of the current ACS recommendations is to delay elective surgeries in a triaged fashion in order to spare healthcare resources and protect the larger system, which is preparing for a state of crisis. If the expected surge of patients requiring hospital admissions occurs, continuation of elective surgery (particularly operations like joint replacement and cosmetic surgery), present an obviously unnecessary burden. These recommendations stem from the situation unfolding in Italy where the exponential transmission of the virus, prior to the current lockdown, has resulted in over 180,000 infected individuals and 24,000 deaths. In late March and early April, New York City mirrored this same surge, which exhausted healthcare workers and saturated the healthcare system, where in some cases patients were unable to receive the care they require.

In order to reconcile these national recommendations and provide clarity to how hospital systems should triage the surgical care of patients, more specific guidelines are necessary. While national level algorithms may be helpful and are being developed by the ACS, regional guidelines may be more appropriate in the current situation as the impact of the virus has been felt differently among states. Cooperation between hospital systems, both public and private, in counties and states, is crucial to appropriately triage patients and allocate resources.

For many private practices offering elective operations, the immediate impact of this healthcare crisis may not be directly felt. However, these surgeons can play a part in mitigating the spread and flattening the curve of COVID-19. This can involve shutting down a practice temporarily or offering limited services during shortened hours to encourage social distancing. While delaying elective surgeries in such practices will have a short-term financial impact, these are likely to be recuperated in the long-term. Regardless of the impact, financial considerations should be the lowest priority in the setting of a national state of emergency. In addition to its financial implications, the cost of elective surgeries in terms of PPE utilized, pharmaceutical and blood products, staff safety, and OR equipment and ventilator usage cannot be understated. Surgeons in private practice can even play a role in lending OR equipment or supplying pharmaceuticals that are in shortage during this time.

Many surgical practices utilize Facebook pages and Instagram posts to advertise procedures and promotions, which could be repurposed during this pandemic as public health

forums to promote good hygiene and social distancing. Importantly, they can be used to disseminate accurate medical information and prevent hysteria. National and surgical specialty organizations could strongly recommend all surgical practices help enforce public safety messages as many such practices have a strong social media presence, particularly among younger audiences that may be asymptomatic carriers of the disease. Finally, emergency departments and intensive care units may soon need surgeons to help staff the growing need for treating critically ill patients, which has already been the case in New York. Instead of continuing elective cases, surgeons could support the public health efforts by stepping in to help emergency physicians, intensivists or any other practice where needs are greatest.

Regionally, the responses to the triage of “elective” surgical procedures have varied across states. For instance, the Massachusetts General Hospital recently described their multidisciplinary team approach to managing elective cancer surgery during the pandemic.⁷ Similarly, multidisciplinary strategies have been implemented at our institutions to manage breast and skin cancers to determine what are reasonable time frames to delay surgical intervention by trialing close observation or even medical management that would normally be outside the standard of care. In instances where such delay is not feasible, an algorithm is in place for appropriate preoperative testing of the patient and protocols are in place to ensure patient and surgical staff safety before, during, and after the operation. These include measures such as appropriate PPE for all surgical staff, protection of anesthesiology staff who are at high-risk for exposure during aerosol generating procedures (i.e., intubation) and waiting times after intubation and extubation for OR staff who do not wear appropriate N95 masks. The number of surgical teams available to support such “essential elective” operations is in a state of constant flux and contingent on projected models for admitted COVID-19 patients, need for PPE, and available resources like operating rooms and ventilators, which have been repurposed in some locations to support critical care.

Ultimately, frequent communication and a coordinated effort will be required between public and private practices during this pandemic. In a recent perspective on COVID-19, Bill Gates urged governments and industry to work together to tackle this once-in-a-century pandemic.⁸ National organizations have a key role in guiding regional public and private practices to push for more coordinated efforts. As surgical operations and procedures are resource intensive, private practices can support larger academic, and safety net public hospitals as they prepare for an unprecedented burden on our healthcare system. In timely and relevant publications within this journal through local experiences and lessons learned from abroad, helpful recommendations have been provided on how to manage surgical systems and ORs during and after this pandemic.^{9,10} These conversations need to occur soon – as Italy and New York have taught us, the worst may be yet to come.

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