

The authors reported no conflicts of interest.

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REPLY: ELECTIVE WITH AN ASTERISK
Reply to the Editor:



“In preparing for battle I have always found that plans are useless, but planning is indispensable.”

—Dwight D. Eisenhower

I read with interest the response from Mahkdoum and colleagues¹ to Rajagopal² positing a wicked dilemma for cardiac surgeons. Although cardiac surgery clearly saves lives, George and colleagues³ distilled a hard lesson from their coronavirus disease 2019 (COVID-19) pandemic experience in New York during which they triaged cardiac surgery patients to keep procedures to a minimum and reallocate personnel and resources to treat COVID-19 patients to save more lives. Rajagopal took 1 provocative step further: If we take the global perspective, cardiac surgery patients are not special, nor should they have special consideration during a pandemic. Although some cardiac surgery is time imperative and lifesaving, most procedures are life

improving or the best treatment for a given population/disease. Mahkdoum and colleagues¹ outline an ethical and societal framework in answer to this dilemma. The essay is thoughtful, thorough, and compelling. They marry cardiac surgeons’ concerns with those of the ethicists,⁴ adding modeling and simulation to the loop to enable better decisions, more efficiently allocate resources, and build stakeholder consensus. Why not?

Currently in Florida, health care has critical shortages. As I write, I am struggling to find a bed for a 26-year-old woman with COVID-19 acute respiratory disease syndrome who was pregnant until earlier today and critically hypoxic on venoarterial extracorporeal membrane oxygenation (ECMO) at a hospital 200 miles away. Bad weather is blocking air transport. Local institutions have declined transfer due to capacity. We are at capacity. Should we take a patient who needs our expertise from outside our service area while we are at capacity? What implications does this decision have for subsequent requests? Who should decide? Who are the stakeholders for this patient? For the patients who will need ECMO tomorrow? What do the models say? Our analytics predict growing shortfalls in beds, staff, and medicines.

Clear need exists to model the pandemic and simulate resource needs. Surgeon-scientists seek data to measure, improve, and predict. All health care institutions participated in some predictive modeling. Despite ample data and complex modeling, most models performed poorly. Why? Models cannot consider irrational behavior, assuming instead that people will act in their best interest, such as to minimize exposure to the pathogen during a pandemic—an assumption that may be true in Toronto but apparently does not hold in Florida.⁵ Models do not include variability in hospital behavior. During a statewide halt of elective surgery, some hospitals continued to perform these procedures, nuancing the definition of elective in the context of local COVID-19 burden. Such nuances exist within a hospital. My colleagues suggested that transcatheter aortic valve replacement is elective with an asterisk, invoking, as Mahkdoum and colleagues¹ did, the price of waiting. These patients consume little in the way of resources. Elective with an asterisk. Heart transplant? Ventricular assist device placement? How do we weigh the needs of 1 life against the needs of another?

Models need reliable data. Data such as disease incidence, case fatality rate, and risk of transmission are essential to even the most basic modeling. These models depend on public data from broad testing for COVID-19, without which, modeling is marginal at best. This pandemic has unmasked our vulnerability to our data or lack thereof.

Capacity only exists for a moment in time with the space, resources, and team to care for a given patient. Despite broadcasting to the Florida ECMO Network and placing calls to friends and colleagues, no center accepted the patient I described earlier. Despite our hospital being at capacity, our ECMO transport team brought her via

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fixed-wing aircraft to our facility where her cannulation was revised and she stabilized. Was this the right decision? I do not know. I do know that my colleagues to the north have the concepts right and that they are applying them in an ethically sound manner, whatever the model says.

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The question arises, what is the role of utilitarianism in cardiac surgery—a field rife with acuity and where “elective” perhaps could be redefined as “electively acute”? As Makhdoum and colleagues¹ point out, modest delays are permissible, but there is always a price to pay. Head and colleagues³ reported a 1.1% death rate per 1000 patient-weeks while awaiting surgery. However, this cost becomes affordable to society when the alternative is almost certainly 100% fatal in a patient with Coronavirus Disease 2019 (COVID 19) and acute respiratory disease syndrome requiring intensive care unit (ICU) care.

Medical decision making is rooted in individualistic clinician beliefs and often does not fully consider resource allocation at a societal level. This, of course, makes sense. Surgeons primarily have a fiduciary responsibility to their patients, even after the first clinic visit. How could we defer surgical revascularization for patient X seen in the office with his family for the benefit of an unidentified statistic (ie, a patient in the emergency department with worsening COVID acute respiratory disease syndrome)? The fact is that those “statistics” are *known* to their friends and families and so operating on, and subsequently using an ICU bed for, a known patient could indirectly worsen outcomes for another. This puts surgeons in unfamiliar territory—a shift from a prioritization of their patient to that of society.

The arithmetic guiding these decisions, stemming from arguments over cost-effectiveness and quality-adjusted life year maximization, can be debated infinitum. Ultimately, to maximize gain and minimize harm, we need agreed-upon decision-making algorithms and risk stratification tools to weigh predicted resource consumption against anticipated gain. The Society of Thoracic Surgeons online calculators have made inroads into this challenge with predicted ventilator durations, continuous venovenous hemofiltration probability, and so forth, but the job is far from over. In our article,⁴ we sought to establish qualitative thresholds by which surgeons could more objectively decide whether to operate on a given patient during a given phase of the pandemic. However, this type of heuristic is still limited by its unit conversion. What proportion of “resource consumption” to “life years gained” is ethically acceptable? Common units are needed to make this kind of comparison. Bolstered with more objective data that will likely emerge from this pandemic, perhaps more sophisticated heuristics can be developed balancing potential “life years gained” against potential “life years lost.”

Another surge will come. It may not be a “second wave” of COVID-19 that overwhelms ICU capacity, but our healthcare system will inevitably be tested again in the future. To prepare, we must harness the data emerging from this pandemic to advance our surgical triaging skills and develop more robust tools to more objectively work through issues of ethical proportionalities. Clinical wards once uncomfortable caring for patients requiring

**REPLY: A PROBLEM OF
“ETHIC”
PROPORTIONS**
Reply to the Editor:



As healthcare providers, we must care for those who are sick. Our industry is not afforded the luxury of capping production or stopping the assembly line when conditions become overwhelming. Naturally, this means compromises must be made, operations delayed, staff reassigned, and, potentially, prioritization of care when hospitals begin to exceed capacity. Resources are finite, and in times of pandemic, procedural justice guided by utilitarianism, collectivism, and common sense must prevail.

Makhdoum and colleagues¹ present a thoughtful letter on the philosophical perspectives surrounding critical care and cardiac surgical case prioritization. The crux of the argument is “there are no simple solutions” to, in the words of Dr Rajagopal, this “wicked” and highly complex problem.²