

Considerations for Triageing Elective Cases in Children With Cardiac Disease in a Time of Crisis

With anticipated increased patient volume and need for resources related to coronavirus disease 2019 (COVID-19), hospitals have requested that proceduralists postpone nonemergent procedures and surgeries. Tiered definitions of elective, urgent, and emergent surgeries are established for the adult population, allowing clear recommendations for addressing these tiers of cases during the COVID-19 pandemic.¹ However, among specialty populations, including children with cardiac disease, defining an elective case (EC) is not as straightforward.

Definitions distinguishing between elective and urgent rely on a time period for which the procedure could be safely delayed.² However, with COVID-19, multiple unknowns remain, including outbreak duration, demand on resources, and the magnitude and severity of potential iatrogenic exposure. It is unlikely that the duration of EC postponement can be predicted. Whereas clear-cut elective ECs exist in adult ambulatory populations (such as purely cosmetic procedures), in pediatric cardiology ECs are merely those that can be scheduled in advance when cardiac disease has been stable for a time period before the procedure.² All procedures in children with cardiac disease must still be performed, from implantable cardioverter defibrillator implantations to Tetralogy of Fallot repairs. With ongoing resource strain from COVID-19, a triage approach for ECs is necessary. We discuss an approach to triaging ECs in the pediatric cardiac population.

Rationing medical services is always unpleasant, paternalistic, and onerous in the knowledge that someone will not get care they could have received under different circumstances. Physicians have a fiduciary responsibility to act in an individual patient's best interest,³ not an inviolable duty. A clinician's primary goal is the well-being of each patient. An important secondary objective is optimizing access to care for all patients. COVID-19 has already required rationing, globally and in the United States. We must, therefore, acknowledge that rationing is possible and approach it using established ethical principles of utility, beneficence, justice, and autonomy.³

Four approaches are generally recommended for physicians when considering rationing.³ Physicians must try first to get more resources for patients within the system. Because of COVID-19, efforts are underway to increase intensive care unit bed and ventilator availability. This increase will, presumably, lessen pressure on units to ration for patients with non-COVID-19 illness, including children with cardiac disease. Second, rationing decisions must be made openly and transparently. Third, and related, rationing decisions should incorporate second opinions from other clinicians and stakeholders. Second opinions are vital so that no one feels, in hindsight, that decisions were made unjustly or that vital information was overlooked. The community of clinicians caring for children with cardiac disease urgently needs to pursue this

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consensus. Individual-led decision-making risks being arbitrary and biased.³ Lack of transparency is erosive to patient trust in physicians and the health-care system as well as trust among physicians, when it is most needed. Lastly, patients or surrogates must be notified as soon as the decision is made to ration care. Although media alerts and shelter-in-place orders to “flatten the curve” have likely made patients aware of the incipient COVID-19 healthcare resource crisis, direct communication must occur between pediatric heart centers and patients. Such communication provides clear and necessary guidance amid uncertainty.

So how should we triage ECs and what methodologies or data would we base recommendations on? Ethical guidance on mass casualty events and catastrophes (for which COVID-19 qualifies) recommends cohorting patients.⁴ Depending on available resources, 1 of 2 groups receives priority: patients with the greatest chance of survival requiring the least expenditure of resources; or, if more resources are available, patients with an increasingly urgent threat to life if not cared for and a reasonable chance of being successfully treated.

In pediatric cardiology, we argue that both groups should be given triage priority for ECs. The first group comprises cases requiring minimal intervention with maximal benefit and would be the easiest to perform, such as adolescents needing primary prevention implantable cardioverter defibrillator placement. They could have same-day procedures, not consume inpatient resources, and their lives would be protected. The second group comprises children at high risk of deterioration—those outgrowing shunts or in heart failure from treatable overcirculation, who would require significant intervention (ie, operating room time and intensive care unit beds) but have maximal chance of a successful outcome. If resources allow, these patients warrant being scheduled despite their anticipated resource demand because they can be successfully treated and, if left untreated, they would progressively worsen, possibly consume even more resources through late urgent or emergent surgery, and would have worse morbidity and mortality overall. Existing lesion severity scoring can help in identifying patients in this second group and triaging ECs for them. Depending on resource constraint, some infants with ductal-dependent lesions stable on prostaglandin may need to be considered in this EC group rather than as urgent procedures but could be discharged after recovering from procedural intervention.

A third group will also exist and be the most ethically challenging to triage. These are patients for whom intervention cannot guarantee a successful outcome and the likelihood of morbidity requiring ongoing

healthcare resources is high. Risk scores provide some guidance in identifying these patients, but clinical acumen will be equally valuable.

Recognizing that cardiac ECs are competing for procedural space with ECs from other clinical areas (eg, oncology, neurosurgery), expanded collaboration is needed between heart centers nationwide. COVID-19 will impact regions differently in both timing and severity. Heart centers in certain regions may have more availability to perform ECs than others, and transferring patients between centers may reduce delays in needed care.

Further complicating considerations of pediatric cardiac resources is the growing concern that extracorporeal membrane oxygenation may play a rescue role in COVID-19 treatment and evidence of emerging cardiac-specific complications of COVID-19, including myocarditis.⁵ Although not ECs themselves, patients requiring extracorporeal membrane oxygenation will place significant demand on resources available for ECs. The prognosis with extracorporeal membrane oxygenation will need to be considered against the needs of waiting EC patients.

Implementing cohorting and triage of ECs will require each heart center to form a committee of community members (clinicians, ethicists, and patient advocates) to undertake these tasks. Debates and uncertainties around prognoses are inevitable but must be resolved through combining established rationing and triage approaches with understanding of local patient populations and resource availability. At the national level, dialogue between these committees is also needed to provide additional perspective on triage decisions and assess national resources.

The prospect of rationing access to procedures in the face of a pandemic is daunting, especially when ECs in children with cardiac disease are not elective but lifesaving. Using these established approaches of creating triage committees, establishing regional awareness of resources, and drawing on published rationing guidance will maximize the number of children with cardiac disease who can receive needed treatment, minimize the emotional toll of postponing procedures on families and clinicians, and protect individual bedside providers from accusations of misconduct during a time of crisis.³ We have been fortunate in the United States to avoid significant triaging and rationing in the past. To avoid a battlefield scenario of the decision burden falling on a lone triage officer, we must consider our triage and rationing approach to ECs now, before the full force of the pandemic hits.⁴ Like battlefield medicine, needs will exceed resources with the COVID-19 pandemic. We must be prepared to execute triage decisions ethically, using an agreed-on and transparent approach, supported by consensus opinion.

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Disclosures

None.

REFERENCES

1. American College of Surgeons. COVID-19: Guidance for Triage of Non-Emergent Surgical Procedures. March 17, 2020. <https://www.facs.org/about-acs/covid-19/information-for-surgeons/triage>. Accessed March 20, 2020.
2. Clark, RE. Definitions of terms of the Society of Thoracic Surgeons National Cardiac Surgery Database. *Ann Thorac Surg*. 1994; 58:271–273.
3. Lo B. *Resolving ethical Dilemmas: A guide for clinicians*. 6th Edition. Lippincott Williams & Wilkins; 2001: 228-233.
4. Repine TB, Lisagor P, Cohen DJ. The dynamics and ethics of triage: rationing care in hard times. *Mil Med*. 2005;170:505–509. doi: 10.7205/milmed.170.6.505
5. Driggin E, Madhavan MV, Bikdeli B, Chuich T, Laracy J, Biondi-Zoccai G, Brown TS, Der Nigoghossian C, Zidar DA, Haythe J, et al. Cardiovascular considerations for patients, health care workers, and health systems during the COVID-19 pandemic. *J Am Coll Cardiol*. 2020;75:2352–2371. doi: 10.1016/j.jacc.2020.03.031