The Sword of Damocles: Family Presence and Extracorporeal Life Support During The COVID-19 Pandemic and Beyond

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During Ontario's busiest surge of COVID-19 (coronavirus disease) to date, our Pediatric ICU at the Hospital for Sick Children (normally an entirely pediatric referral centre) admitted adult patients under our care. Our extracorporeal life support (ECLS) program quickly adapted to this new reality—we admitted adults previously cannulated to ECLS and cannulated a number of adult patients, while maintaining our usual pediatric ECLS cases. The following reflections stem from the family presence restrictions in place due to COVID-19, in particular the clarity these constraints have lent to our role in supporting families as they navigate the unique tension between life and death that is ECLS.

Dionysius II, an ancient ruler of Syracuse, responded to a courtier's flattery by having him rule in his stead for one day. That courtier, Damocles, eagerly embraced the opulence and power of his role but, looking up from his throne, noticed that Dionysius had placed a sword directly above his head—its handle was suspended from the ceiling by a single hair, to teach Damocles the danger inherent in the life of a ruler. Terrified, Damocles abandoned his newfound privileges and returned the crown to Dionysius.

More than two millennia have passed, and we find ourselves struggling against the despotic rule of COVID-19, its viral structure even boasting its own corona, crown. Amidst the armamentarium of modern medicine, ECLS has affirmed its role as a last resort—veno-venous (V-V) ECLS, judiciously applied, has become a bridge to recovery[1] (and in rare cases, lung transplantation[2]) with 90 day survival in the Extracorporeal Life Support Organization COVID-19 registry dashboard approaching 50%.[3] When you place a patient on V-V ECLS after several hours of trying to coax gas exchange out of lungs which have become like stones, the team breathes a sigh of relief and, like Damocles surveying the gilt palace, basks in the glow of a better blood gas while the ECLS console hums with newfound hope in recovery. But like Damocles we all look up, sooner or later, and remember the sword that plagues our hopes and safety. Device failure, an intracranial bleed, an intrathoracic bleed, a gastrointestinal bleed, an opportunistic infection… these are kept at bay by a very thin thread.

None of this is new to anyone who cares for patients supported on ECLS, yet we all forget at times to look up and ponder that sword. And more importantly, we struggle to help families maintain that awareness, to understand that when we say their loved one is stable on ECLS the latter two words represent a radical caveat to the first. The COVID-19 pandemic has served as an urgent reminder of the importance of ensuring families understand the inherently tenuous nature of their loved one's path to recovery with ECLS. For those who cannot visit in person due to public health and infection control measures, it becomes imperative to use whatever tools are possible (including video platforms and language translation when necessary) to highlight the absolute dependence—of their spouse or partner, their parent, or their child or sibling—upon a machine that, at great risk, pumps blood in and out of their body through an oxygenator membrane. The myriad risks must be clear and ever present. For those who can visit, during and beyond COVID-19, we must advocate for frequent visits, daily if possible, consistent with the accompaniment that we would wish for any patient whose life hangs in the balance.

COVID-19 has brought a tragic loss of life throughout the world, with the concomitant tragedy and trauma of countless patients who have borne suffering and died unaccompanied. Where public health authorities and infection control policies give us an inch we must take a mile and bring families to the bedside of patients supported on ECLS. When each day might see the sword of Damocles descend, it behooves us to make that sword visible and, more importantly, to make patients and families visible to one another as best we can.

The challenge of supporting families through a patient's prolonged dependence upon a terrifyingly high-risk therapy is a relatively novel challenge that will become more common in the years ahead, given the ever-expanding role of ECLS and increasingly versatile heart and organ-assist devices. How can we ensure that all parties glance with some regularity at the thin thread of survival, while also providing reassurance and encouraging some adaptation to a new normal that will never be normal? COVID-19 has served to highlight the fragile nature of communication in healthcare, and while the pandemic's reign may end before long, we are now better equipped than ever before to engage patients and families in the day-to-day journey that is ECLS.

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References

1. Barbaro RP, MacLaren G, Boonstra PS, *et al*; Extracorporeal Life Support Organization: Extracorporeal membrane oxygenation support in COVID-19: an international cohort study of the Extracorporeal Life Support Organization registry. *Lancet* 396: 1071–1078, 2020.
2. Bharat A, Machuca TN, Querrey M, *et al*: Early outcomes after lung transplantation for severe COVID-19: a series of the first consecutive cases from four countries. *Lancet Respir Med* 9: 487–497, 2021.
3. ELSO. *Data from: ECMO Registry of the Extracorporeal Life Support Organization (ELSO)*. Ann Arbor, Michigan, ELSO, 2021 Available at: https://www.elso.org/COVID19.aspx.

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