

2018 AAP and APA Ethics Essay Contest – 2nd Place

Doing No Harm in Pediatric Emergency Medicine: When and How to Call the Code?

Kristina Brumme, MD, FAAP

The call to the Emergency Department told us only, “Infant, possibly 7 months, cardiopulmonary resuscitation (CPR) in progress.” No weight, no mechanism of injury, no further details. After an initial flurry of activity in the trauma bay, we wait. The members of the team have assembled, signed in, gowned up—now we pause, listening for the helicopter to land or the ambulance to arrive. The pause seems interminable: time for reviewing algorithms, checking equipment, and deciding how to begin. What we do not discuss is how to end, that is, how we establish team consensus for when it is time to stop, to call a halt, to end repeated attempts at resuscitation.

Considering criteria for cessation of resuscitative efforts even before the patient’s arrival may seem cynical and counter to the missive “save better, save faster.” However, in the rapidly evolving milieu of improving technological support of resuscitative efforts, considering not just what we *can* do, but also what we *should* do, is essential. Yet this question is rarely asked in pediatric emergency medicine. The normative underpinnings are rapidly lost amongst the reflexive and seemingly prescribed steps during an initial resuscitation. In trying to save a life, there simply isn’t time for reflection.

The infant arrives, and resuscitation is transferred from the emergency medics service (EMS) to the emergency department (ED) team. Rapid execution of Pediatric Advanced Life Support (PALS) for pulseless electrical activity ensues. Stunned family members watch from the doorway, unable to get to the bedside through the cluster of providers working to establish access, secure the airway, and continue high quality CPR. Despite an unknown down time at home and transport time, we give multiple rounds of epinephrine and continue more than 25 minutes of acute resuscitation before finally achieving return of spontaneous circulation. With each passing minute, the likelihood of a good neurologic outcome rapidly dwindles.

Transported to the intensive care unit (ICU), the infant had a heart rate, no spontaneous respiratory effort, and fixed pupils. The initial computed tomography (CT) confirmed significant hypoxic brain injury. Now, months later, I still think about whether we did this child and their family a disservice, if I failed in my promise to do no harm. Can I at least be reassured that the resuscitation was a “success” because the infant came into the emergency department with no heart rate and left with one? Periodically I review the infant’s hospital course. The child is ventilator dependent with a tracheostomy and no organized spontaneous respiratory effort; nutritional support is provided through a gastrostomy tube; and there is no discernable neurologic interaction with the environment. The family continues to be present at bedside struggling to adjust to their new reality. The child was saved, but is profoundly different from the child this family enjoyed days before the catastrophe of suffocation. And worse, it is unclear if I did harm in pro-longing their child’s life and suffering. As a fellow trainee and not the ultimate decision maker, did I fail by not speaking up and advocating for transition towards comfort care as opposed to remaining silent during the continued aggressive resuscitation? Even more, how

can we have this conversation regarding cessation of resuscitation while actively trying to save a life?

In sorting through my own feelings of moral distress regarding a prolonged resuscitation and poor neurologic outcome, it is difficult to find literature to specifically outline quantitative criteria that would be essential for the fast decisions necessary in pediatric emergency medicine. Formal adult protocols for termination of resuscitation in the field have high positive predictive power for survival and serve the secondary benefit of decreasing medical costs, improving safety for EMS providers, and often improving the family's transition towards the grief processing (Munoz 2017). Unfortunately, none of these protocols have been adapted to the pediatric setting.

Validated qualitative criteria for the cessation of resuscitative efforts are equally limited. In determining how to proceed, the concept of qualitative futility exists if a patient does not have the capacity to appreciate the benefits of life. For pediatric patients, providers must speculate on their patient's future capacity to appreciate life (Miller-Smith 2017). There is a wealth of literature in neonatology and pediatric critical care that suggests we are poor predictors of outcomes and that prognosis varies vastly even with seemingly congruent initial presentations. So what tools is a pediatric emergency medicine provider left with?

We need a practical framework to identify signs or stages in resuscitation for when to stop. More importantly, this practical framework needs to be applicable to the emergency care setting. There is no easy solution. There has been much literature devoted to the contentious topic of medical futility which has long represented conflict between patient and family wishes and the physiologic reality of the patient's condition as the medical team views it. Eloquently stated, futility has indeed been abused. The term has been applied and misapplied, defined and redefined, molded and remolded until the real meaning is no longer understood. When a word loses its meaning, it loses its power (Miller-Smith 2017).

More recently the concept has been divided into physiologic futility, an inability to achieve the intended biologic goal of treatment, versus inappropriate treatment, where the goal of treatment is unreasonable (Truog 2017). Perhaps this delineation helps achieve clarity, but it remains an issue of semantics; we have succeeded in changing nomenclature but have not improved applicability. The moral murkiness is not from situations where goals of care are physiologically futile with no chance of a positive outcome, but from attempting to define the slippery spectrum between appropriate and inappropriate care. Discomfort in addressing this is secondary to provider discomfort in shifting goals based on patient presentation and poor transitions between curative and comfort care (Weiss 2018). Furthermore, in attempting to define criteria for inappropriate care, the bulk of the literature is centered in intensive care units, focused around technologically dependent, medically fragile children, or chronically ill children with few remaining options. Suggestions regarding how to resolve situations with potentially inappropriate care are measured, structured methods requiring a time-intensive, step-wise approach, ongoing conversations with the patient and family as well as the care team, and establishment of a therapeutic relationship (Paris 2018). All luxuries ill-adapted to the emergency department context.

For emergency medicine providers, issues of medical futility, inappropriate treatments, and how aggressively to pursue resuscitation are compounded by a number of unique considerations including: a profound information gap, multiple medical providers during resuscitative efforts, no relationship with the family, differences between previously healthy children versus chronically ill children, high emotions in pediatric resuscitation, language barriers, litigation--the list goes on.

There is no consensus regarding termination of resuscitation despite multiple multidisciplinary statements by appropriate stakeholders. In 2014 a Joint Position Statement on behalf of trauma surgery, EMS, the American Academy of Pediatrics and American College of Emergency Physicians was released summarizing criteria specifically for *traumatic cardiopulmonary arrest* in which termination of resuscitation can occur after greater than 30 minutes of CPR or if the facility is greater than 30 minutes away. Additionally, on review of cases, for this specific subset of patients, there is only 5-10% overall survival with 0-12% having good neurologic outcome (Topjian 2008). Appeals to the use of parents as surrogate decision makers regarding termination of resuscitation in the field are equally fraught since the ability of parents to grasp the risks and benefits of extraordinary treatment, and provide informed consent for their child is compromised by the urgency of the process, guilt, incomplete information, and health literacy. Ultimately, with many caveats regarding the strength of the literature, the recommendations leave considerable ambiguity, except for trauma victims with injuries obviously incompatible with life (decapitation) or patients for whom there has been a significant period of pulselessness (dependent lividity, rigor mortis) (Fallat 2014). This small subset of patients are not the patients where appropriate versus inappropriate care present a moral quandary.

It is difficult to have a discussion of medical futility or inappropriate treatment without addressing resource consumption, and furthermore, value judgements regarding quality of life for patients and their families following prolonged resuscitative efforts. It should be apparent from the above-mentioned literature that these are relative issues within the scope of the large arc of acute resuscitation. Technology is outpacing our ability to discuss the morality of provision of care and it is essential to engage in this discussion, specifically as emergency medicine providers, before the menu of extraordinary measures expands. Decisions to cease resuscitative efforts are enormously difficult, and are compounded by the added pressures of time and relative paucity of information in the emergency setting. However, these decisions have profound effects on the thousands of patients and families whose lives are irrevocably altered by the physiologic survival of a child with profoundly diminished capacity. There will be no one-size-fits-all guide that can capture the complexity of these cases, but this only further clarifies the necessity for an informed, rational dialogue about these cases that is currently lacking from the literature. If we cannot consider these cases with the luxury of time and rationality, we can never incorporate this into the team pause, as we wait, hoping to help the next patient coming in.

References:

- Bibler, Trevor M., Myrick C. Shinall, and Devan Stahl. "Responding to Those Who Hope for a Miracle: Practices for Clinical Bioethicists." *The American Journal of Bioethics* 18, no. 5 (May 4, 2018): 40–51. <https://doi.org/10.1080/15265161.2018.1431702>.
- Capizzani, Anthony R., Robert Drongowski, and Peter F. Ehrlich. "Assessment of Termination of Trauma Resuscitation Guidelines: Are Children Small Adults?" *Journal of Pediatric Surgery* 45, no. 5 (May 2010): 903–7. <https://doi.org/10.1016/j.jpedsurg.2010.02.014>.
- Kalkwarf, Kyle J., Shane D. Jensen, Myron Allukian, Matthew T. Harting, Charles S. Cox, Erin E. Fox, Charles E. Wade, and Bryan A. Cotton. "Can We Identify Futility in Kids? An Evaluation of Admission Parameters Predicting 100% Mortality in 1,292 Severely Injured Children." *Journal of the American College of Surgeons* 226, no. 4 (April 2018): 662–67. <https://doi.org/10.1016/j.jamcollsurg.2017.12.034>.
- Marron, Jonathan M., Emma Jones, and Joanne Wolfe. "Is There Ever a Role for the Unilateral Do Not Attempt Resuscitation Order in Pediatric Care?" *Journal of Pain and Symptom*

Management 55, no. 1 (January 2018): 164–71.
<https://doi.org/10.1016/j.jpainsymman.2017.09.006>.

Miller--Smith, Laura. "The True Abuse of Futility." *Perspectives in Biology and Medicine* 60, no. 3 (2018): 403–7. <https://doi.org/10.1353/pbm.2018.0015>.

Muñoz, Michael G., and David H. Beyda. "An Ethical Justification for Termination of Resuscitation Protocols for Pediatric Patients." *Pediatric Emergency Care* 33, no. 7 (2017): 505–515.

Paris, John J., and Brian M. Cummings. "Longshot, Fantasy, and Pipedreams." *The American Journal of Bioethics* 18, no. 1 (January 2, 2018): 19–21.
<https://doi.org/10.1080/15265161.2017.1411082>.

Rubin, Michael A., and Robert D. Truog. "What to Do When There Aren't Enough Beds in the PICU." *AMA Journal of Ethics* 19, no. 2 (2017): 157.

Weiss, Elliott Mark, and Autumn Fiester. "From 'Longshot' to 'Fantasy': Obligations to Pediatric Patients and Families When Last--Ditch Medical Efforts Fail." *The American Journal of Bioethics* 18, no. 1 (January 2, 2018): 3–11. <https://doi.org/10.1080/15265161.2017.1401157>.

"Withholding or Termination of Resuscitation in Pediatric Out--of--Hospital Traumatic Cardiopulmonary Arrest." *Annals of Emergency Medicine* 63, no. 4 (April 2014): 504–15.
<https://doi.org/10.1016/j.annemergmed.2014.01.013>