

Ethics of Acute Care Surgery

Laurence B. McCullough

INTRODUCTION

Trauma care is undertaken in order to save the lives and protect the health of patients who have experienced injuries. The health of patients includes such ethically significant outcomes include survival as well as morbidity, functional status, quality of life, pain, distress, and suffering. Survival as well as these health-related outcomes must be taken into account in an adequate ethics of acute care surgery in the context of trauma. The ethical obligation to provide trauma care, however, is therefore not unlimited. Sometimes it becomes ethically justified to set limits on the medical or surgical management of trauma, especially on the basis of clinical judgments of futility.

In general terms, futility means that a clinical intervention is reliably expected not to have its usually intended survival or health-related outcome. The clinical applicability of this general notion of futility requires that the outcome be clearly specified. Otherwise, clinical discourse among physicians or with patients and their families is at high risk of gridlock from unnecessary confusion about what is meant by saying that an intervention is “futile.”

Ethical challenges involved in setting limits on clinical management of patients' diagnoses have been recognized in medical ethics since ancient times. In *The Art*, for example, the Hippocratic writers define medicine to include refusing to “treat those who are overmastered by their diseases, realizing that in such cases medicine is powerless.”¹ The ancient physician understood the wisdom of setting limits on clinical intervention. More recently, the issue of setting limits has arisen in the context of critical care and how physicians should respond to requests for inappropriate continuation of life-sustaining interventions such as mechanical ventilation, provision of fluids and nutrition, and pharmacologic support of cardiac function. Issues concerning setting limits now arise routinely in the postoperative setting, and futility is sometimes invoked as a justification for setting limits.² The purpose of this chapter is to identify four major concepts of futility that have been developed in the bioethical and medical literature and to incorporate these concepts with definitions of terminal and irreversible conditions into an algorithm that can be used to set ethically justified limits on the medical and surgical management of trauma patients.

FOUR CONCEPTS OF FUTILITY

The first three concepts of futility appeal to the ethical principle of beneficence as the basis for the requisite specification. This ethical principle, which dates to the ancient world, obligates the physician and other health care professional to seek the greater balance of clinical goods over clinical harms to the patient. The key component of beneficence for clinical judgments of futility is that for an intervention to be reasonable to offer and perform in patient care, it must hold out the prospect of at least a modicum of potential clinical benefit comprehensively considered.³

Tomlinson and Brody introduced the first beneficence-based concept of futility, physiologic futility.⁴ An intervention is judged to be physiologically futile when in evidence-based clinical judgment it is reliably expected not to produce its usually intended physiologic outcome. For example, cardiopulmonary resuscitation that continues for such a prolonged period of time that restoration of spontaneous circulation is no longer reasonably expected is properly judged physiologically futile, because there is at this point no reliable expectation, based on outcomes data, to support a clinical judgment that the physiological outcome of resuscitation, restoration of spontaneous circulation, can be achieved.

Brody and Halevy introduced the second beneficence-based concept of futility, imminent demise futility.⁵ An intervention is judged to be futile in this second sense when it is reliably expected that the patient will die before discharge and not recover consciousness beforehand. Both conditions must be met for this specified concept of futility to apply clinically. For example, two large case series have shown that for patients who arrested in the field but were not successfully resuscitated upon arrival in the emergency department (ED) all were dead at discharge and with rare exceptions never recovered consciousness.^{6,7}

Schneiderman et al introduced the third beneficence-based concept of futility, clinical or overall futility.⁸ A better phrase for this specified concept of futility is interactive-capacity futility. An intervention is judged to be interactive-capacity futile when it is reliably expected not to result in maintenance of any ability by the patient to interact with the environment and

continue to develop as a human being. For example, a patient diagnosed to be in a permanent vegetative state according to accepted criteria or who has suffered severe and extensive head trauma resulting in neurologic devastation that eliminates interactive capacity has irreversibly lost the capacity to interact with the environment and continue to develop.⁹ Although interventions such as provision of nutrition and fluids may continue to be physiologically effective, these interventions do not alter the outcome: irreversible loss of the capacity to interact with the environment.

The fourth concept of futility appeals to the ethical principle of respect for autonomy. This ethical principle, which dates at least from 18th-century medical ethics, obligates the physician to seek the greater balance of goods over harms to the patient as those goods and harms are defined from the patient's perspective, which can range far beyond the relatively narrow scope of *clinical* goods and harms.

Tomlinson and Brody introduced the autonomy based fourth concept of futility, quality-of-life futility.¹⁰ An intervention is judged to be futile in this fourth sense when it is reliably expected that the patient's quality of life (engaging in valued life tasks and gaining satisfaction from doing so) will be unacceptable to the patient. This can occur when it is reliably expected that the patient will not be able to either engage in valued life tasks or derive sufficient satisfaction from engaging in the life tasks that the patient once valued. The patient retains the ability to interact with the environment and develop, but judges the outcomes of doing so to be unacceptable. This concept does not appeal to an observer's rating of the patient's quality of life, because such external evaluation of quality of life is unreliable.¹¹ Using this concept of futility *requires* the reliable identification of the patient's preferred life activities and expectations of satisfaction from them. Obviously, the person in the best position to make such a judgment for the patient is the patient himself or herself, with surrogates who know the patient well making such judgments for patients no longer able to do so for themselves.

AN ALGORITHM FOR MAKING CLINICAL JUDGMENTS OF FUTILITY TO SET LIMITS ON TRAUMA CARE

It is well understood in the ethics of the informed consent process that the physician is obligated to offer information to the patient (or the patient's surrogate) about the medically reasonable alternatives for managing the patient's condition. "Medically reasonable" means that the intervention meets the "modicum of benefit" test of beneficence-based clinical judgment: there is a reasonable expectation of net clinical benefit.³ Not all intervention that is surgically technically possible in the trauma care setting is medically reasonable. Clinical judgments of futility mean that the intervention in question, including life-sustaining interventions in medical and surgical intensive care units, do not meet this test. Futile interventions are not medically reasonable. The physician should therefore recommend against their use and be prepared to meet requests for

them with sensitive, but firm resistance. The proposed algorithm for clinical judgments of futility links the above four concepts of futility to the informed consent process, so that the physician stays in control of this process, which is among his or her fundamental ethical and professional responsibilities.^{12,13}

The proposed algorithm emphasizes a preventive ethics approach to setting limits on surgical clinical management, either by not offering intervention or discontinuing life-sustaining treatment postoperatively in the medical or surgical intensive care unit. Preventive ethics develops and uses policies and decision-making tools to anticipate and prevent ethical conflicts. A preventive ethics approach to setting limits is better than a reactive approach to ethical conflict, because a preventive ethics approach should reduce the biopsychosocial toll of decision making at the end of life on patients, their family members, health care professionals, and the culture of health care organizations.

Futile interventions are not expected to result in acceptable outcomes, comprehensively considered to include both survival and health-related outcomes. "Acceptable outcome" can be defined from a clinical perspective or from the patient's perspective. From such a clinically comprehensive perspective an acceptable outcome is one that prevents imminent death, accomplishes its usually expected physiologic outcome, preserves at least some functional status and therefore interactive capacity, and prevents unnecessary pain, distress, and suffering, both disease-related and iatrogenic. Pain, distress, and suffering are unnecessary when they are not required as disease/injury-related or iatrogenic cost of achieving above goals and when they cannot be managed to an acceptable level. From the patient's perspective an acceptable outcome is one that preserves an acceptable quality of life. As explained above, quality of life means engaging in life tasks and deriving satisfaction from doing so. The clinical component of the patient's quality-of-life assessment is whether the resulting functional status from an intervention is expected to support the patient engaging in valued life tasks and deriving sufficient satisfaction from doing so. This is a judgment that only the patient can make for herself or, by a surrogate decision maker, or on basis of reliable account of patient's valued life tasks and whether predicted functional status supports those life tasks. Physicians should be very wary indeed about making quality-of-life judgments about their patients. This is because of the risk of erroneous external evaluation of patient's quality of life by health care professionals, whose quality-of-life assessment tends to be lower than patients' self-assessments.¹¹

It is crucial to recognize that resuscitation and high risk surgery in the trauma setting should be understood to be the initial steps of the subsequent critical care management of the trauma patient. Critical care intervention is now understood to be trial of management. There is an ethical obligation, as a matter of professional integrity, to initiate or continue a trial of intervention ends when there is no reasonable expectation of achieving the intervention's goals. Critical care intervention has two goals. The short-term goal is the prevention of imminent death and the long-term goal is survival with an acceptable outcome, defined from either a clinical or the patient's perspective as appropriate.

The first step of the algorithm (Fig. 45-1) invokes applicable advance directives/end-of-life legislation. The alternative of discontinuing life-sustaining treatment becomes medically reasonable and should be offered, with an explanation that the use of critical care interventions is not the standard of care for such patients.

The second step of the algorithm invokes physiologic futility. In addressing this question the physician should specify the

outcome precisely. For example, the outcome of resuscitation is the restoration of spontaneous circulation. The outcome of mechanical ventilation is maintenance of adequate levels of oxygenation. It is important to distinguish clearly specified physiologic outcome from physiologic effect (eg, transient heart beat during resuscitation).

If the answer to this second question is yes, then the ethical obligation to continue intervention has ended because

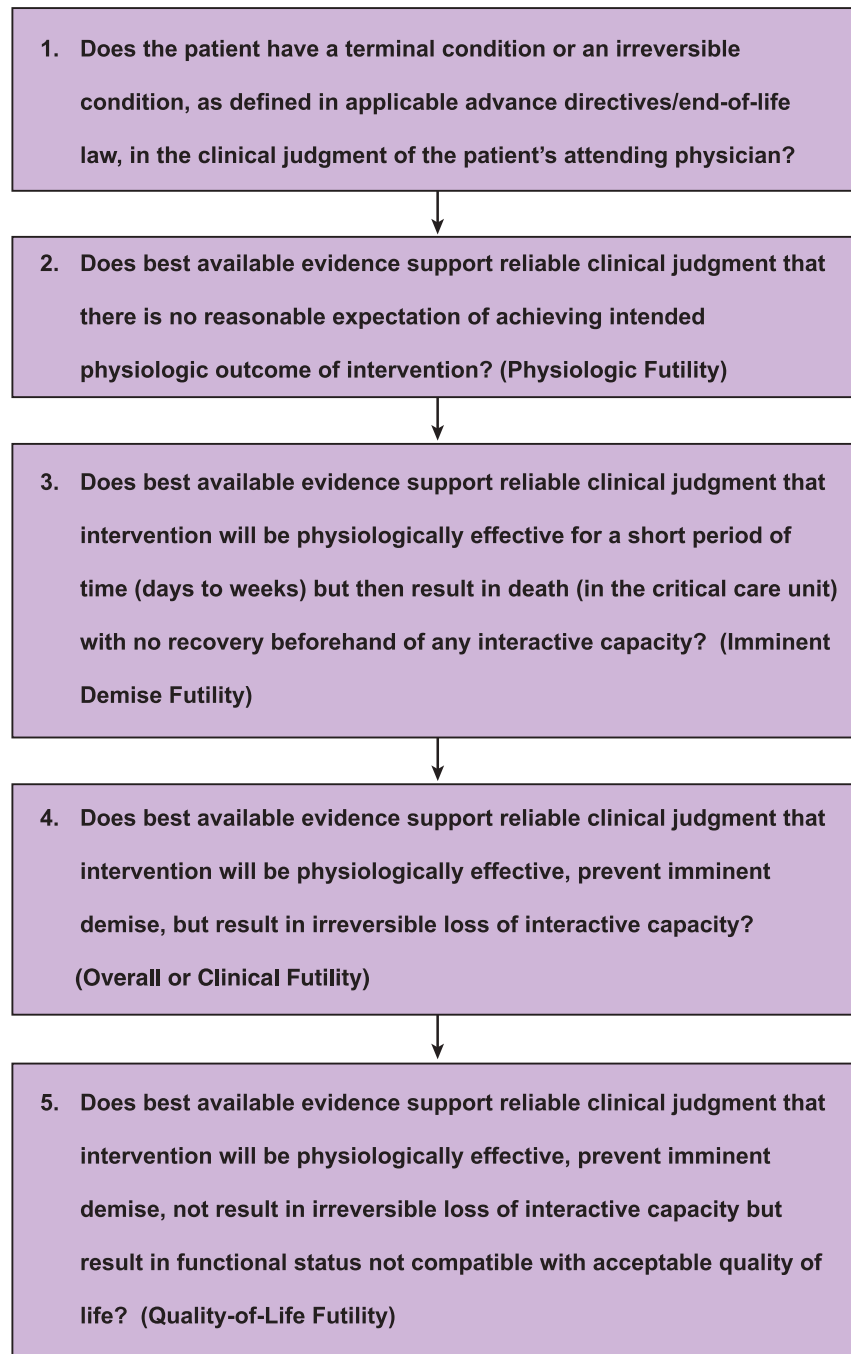


FIGURE 45-1 Decision-making algorithm.

of physiologic futility. An evidence-based judgment of physiologic futility of a critical care intervention means that imminent death cannot be prevented. There is therefore no reasonable expectation that the short-term goal and, therefore, the long-term goal of continued critical care intervention can be achieved. The alternative of discontinuing life-sustaining treatment becomes medically reasonable and should be offered, with an explanation that the use of critical care interventions that are not expected to produce their intended functional outcome is not the standard of care for such patients.

If the answer to this second question is no, then the critical care intervention should be continued while the third question is addressed, which invokes imminent demise futility. If the evidence-based answer is yes, the ethical obligation to continue intervention has ended, because of imminent demise futility. There is no reasonable expectation that the short-term goal and, therefore, the long-term goal of continued critical care intervention can be achieved. The alternative of discontinuing life-sustaining treatment becomes medically reasonable and should be offered, with an explanation that the use of critical care interventions that are not expected to prevent death for patients who are not expected to recover consciousness before they die is not the standard of care for such patients.

If the answer to the third question is no, then critical care intervention should be continued while the fourth question is addressed, which invokes interactive-capacity futility. If the answer to this question is yes, the ethical obligation to continue intervention has ended, because of interactive-capacity futility. The justification is more complex than in the first two questions. There is a reasonable expectation that the short-term goal can be achieved but there is no reasonable expectation that the long-term goal of critical care intervention can be achieved because of unacceptable outcome from a clinical perspective. The alternative of discontinuing life-sustaining treatment becomes medically reasonable and should be offered, with an explanation that the use of critical care interventions for patients who are not expected ever to recover consciousness and interactive capacity is not the standard of care for such patients. If necessary, the distinction between the short-term goal of critical care, which can be achieved, and the long-term goal of critical care, which is not expected to be achieved, should be explained.

If the answer to this fourth question is no, critical care intervention should be continued and the fifth question addressed. If the answer is yes, the ethical obligation to continue intervention has ended, because of quality-of-life futility. The justification becomes slightly more complex. There is a reasonable expectation that the short-term goal can be achieved. However, there is no reasonable expectation that the long-term goal of critical care intervention can be achieved because of unacceptable outcome from patient's perspective (even though outcome is acceptable from a clinical perspective). The alternative of discontinuing life-sustaining treatment becomes medically reasonable and should be offered, with an explanation that the use of critical care interventions that are not consistent in their outcomes with the patient's preferred quality of life is not the standard of care for such patients.

If the answer to this question is no, the physician should prospectively manage uncertainty of by being alert to a developing prognosis or trend toward of one or more of these three concepts of futility. There should be open and complete discussion between ED physician and his or her critical care colleagues in the hospital concerning admission plans for patients for whom the ED physicians reliably thinks that there are such trends toward futility. The ED physician and hospital colleagues should work together to prepare surrogate decision makers for subsequent decisions about setting limits on critical care intervention should any one of the above questions in the proposed algorithm be answered affirmatively.

CONCLUSION

Ethics is an essential component of the surgical and medical management of the trauma patient. The physician's and team's obligation is to undertake clinical intervention that is reliably expected to prevent the trauma patient's imminent death and achieve an acceptable outcome of subsequent critical care intervention. This obligation comes with ethically justified limits, based on advance directive legislation and four concepts of futility. These limits can be addressed in a systematic fashion by using a decision-making algorithm to make responsible decisions and recommendations in the care of the trauma patient.

REFERENCES

1. Hippocrates. The art. In: Reiser SJ, Dyck AJ, Curran WJ, eds. *Ethics in Medicine: Historical Perspectives and Contemporary Concerns*. Cambridge, MA: MIT Press; 1977:6.
2. Halevy A, Baldwin JC. Poor surgical risk patients. In: McCullough LB, Jones JW, Brody BA, eds. *Surgical Ethics*. New York: Oxford University Press; 1998:152–170.
3. Brett A, McCullough LB. When patients request specific interventions: defining the limits of the physician's obligations. *N Engl J Med*. 1986;315:1347–1351.
4. Tomlinson T, Brody H. Ethics and communication in do-not-resuscitate orders. *N Engl J Med*. 1988;318:43–46.
5. Brody BA, Halevy A. Is futility a futile concept. *J Med Philos*. 1995;25:28–36.
6. Gray WA, Capone RJ, Most AS. Unsuccessful emergency medical resuscitation: are continued efforts in the emergency department justified? *N Engl J Med*. 1991;325:1393–1398.
7. Sirbaugh PE, Pepe PE, Shook JE, et al. A prospective, population-based study of the demographics, epidemiology, management, and outcome of out-of-hospital pediatric cardiopulmonary arrest. *Ann Emerg Med*. 1991;33:174–184.
8. Schneiderman LJ, Jecker NS, Jonsen AR. Medical futility: its meaning and ethical implications. *Ann Intern Med*. 1990;112:949–954.
9. American Academy of Neurology, Quality Standards Subcommittee. Practice parameter: assessment and management of patients in the persistent vegetative state. In: Brody BA, Rothstein MA, McCullough LB, Bobinski MA, eds. *Medical Ethics: Codes, Opinions, and Statements*. Washington, DC: Bureau of National Affairs; 2000:393–397.
10. Tomlinson T, Brody H. Futility and the ethics of resuscitation. *JAMA*. 1990;264:1276–1280.
11. Leplège A, Hunt S. The problem of quality of life in medicine. *JAMA*. 1997;278:47–50.
12. Rabeneck L, McCullough LB, Wray NP. Ethically justified, clinically comprehensive guidelines for percutaneous endoscopic gastrostomy tube placement. *The Lancet*. 1997;349:496–498.
13. McCullough LB, Jones JW. Postoperative futility: a clinical algorithm for setting limits. *Br J Surg*. 2001;88:1153–1154.