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VIEWPOINT

The Four-Quadrant Approach to Ethical Issues in Burn Care

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Abstract

Burn injuries raise questions about decision-making capacity, informed consent, medical decision making, patient autonomy, the patient-physician relationship, and medical futility that must be acutely addressed. A commonly used approach to managing ethical challenges focuses on moral principles including respect for patient autonomy, beneficence, nonmaleficence, and justice. Another paradigm for ethical analysis is the "four-quadrant" approach, which poses questions for a given case regarding medical indications, patient preferences, quality of life, and contextual features. We have found this approach to be very effective in the clinical setting. This article will highlight the use of the four-quadrant approach in the management of ethical challenges that arise in the care of the severely burned patient.

Burn Care and Ethics

Acute burn injuries represent a major health concern in the United States.[1] As total body surface area (TBSA) of the burn injury increases, so too does the likelihood of significant morbidity and mortality. Recently, improved understanding and management of severe burn injuries has led to increased overall survival and functional recovery of patients with such injuries.[2] Nevertheless, extensive burn injuries are associated with complex ethical as well as medical challenges. The care of patients with burn injuries frequently involves ethical issues related to evaluation of decisional capacity or surrogate decision making, since whether acutely burned patients have capacity to make informed decisions is not always clear. Additionally, medical futility, quality of life, end-of-life care, and resource allocation might need to be considered.

Numerous frameworks exist to aid health care practitioners in managing ethical challenges that arise during clinical care. The most widely known is the one introduced by Beauchamp and Childress.[3] This framework approaches ethical issues in the context of four moral principles: respect for autonomy, beneficence, nonmaleficence, and justice (see table 1). This framework has been influential because the values it espouses seem to align with our moral norms. In addition, it offers a practical approach to both the teaching and analysis of ethical challenges. A shortcoming of this framework, however, is

that little empirical evidence exists demonstrating that people use the four principles in ethical decision making.[4]

Table 1. Four Main Principles in Beauchamp and Childress's Biomedical Ethics Framework[a]

Principle	Description
Respect for Autonomy	Respect for the individual patient and his or her ability to make decisions with regard to own health and future; right to self-determination
Beneficence	Doing and promoting good; preventing and removing evil or harm
Nonmaleficence	Doing no harm; avoiding harming
Justice	Maximizing benefit to patients and society while emphasizing equality, fairness, and impartiality

[a] Adapted from Beauchamp and Childress.[3]

Jonsen, Siegler, and Winslade have described an approach to clinical ethical case analysis known as the "four-quadrant" approach.[5] This framework, which relies on the four principles but takes a more practical and clinically oriented approach to ethical challenges,[6] has been popularized by its use in the University of Chicago MacLean Center for Clinical Medical Ethics fellowship training program.[7] Within this framework, all ethical problems are analyzed in the context of four topics: medical indications, patient preferences, quality of life, and contextual features (i.e., social, economic, legal, and administrative). Each topic can be approached through a set of specific questions with the goal of identifying various circumstances of a given case and linking them to their underlying ethical principle.[8]

We have used this framework at the University of Chicago Burn and Complex Wound Center and have found it to be effective in navigating ethical issues that arise. The purpose of this article is not to prove the superiority of the four-quadrant approach over other models but to discuss its utility and application in the context of burn care.

Medical Indications

The first quadrant, medical indications, includes diagnosis, prognosis, proposed measures for evaluation and treatment, and expected outcome of treatment. For all clinical scenarios, it is advisable to start by describing what is known about the medical facts of the case. In the context of burn care, this might encompass type and severity of burn injury, planned interventions, and expected course. While this topic is part of any

clinical discussion, in cases with ethical challenges, it is particularly important to further articulate the purpose and goals of planned interventions.

The principles of beneficence and nonmaleficence are highlighted during this goals-of-care discussion. Indeed, any decision made regarding therapy, such as whether and when to operate, should weigh clinical and ethical benefits and risks. Issues of goals of care and decision-making capacity often arise in cases of acutely burned patients due to the severity of burn injuries and the fact that patients might not be able to make informed decisions acutely. Prior to embarking on ethically charged discussions about goals of care, we attempt to make an accurate diagnosis of the problem and to determine its severity and the expected outcome. In addition, we aim to provide the patient and family with meaningful answers to questions regarding recovery and the probability of treatment success.

It is also important to define how expected management decisions might benefit or harm the patient. For severe burns, these include the optimal timing to operate, the need for topical or systemic antibiotics, nutrition optimization, volume replacement, airway management, and rehabilitation. Importantly, severe burns often cause long-term functional and cosmetic consequences, which should be discussed and addressed with the patient and family members.

Patient Preferences

Patients' preferences are relevant from both a medical and ethical standpoint. If the patient has decision-making capacity, his or her preferences should be respected and guide medical care. If the patient does not have decision-making capacity, the patient's presumed wishes or best interests, as conveyed by a surrogate, serve as the guide. Determining decision-making capacity poses a unique challenge in acute burn care. In the 1980s, Sharon H. Imbus and Bruce E. Zawacki wrote that there is often a lucid period immediately after the injury in which patients demonstrate calmness and composure.[9] Accordingly, if informed consent could be obtained from the patient during this time, it should. Other authors, as well as burn survivors, disagree, however, suggesting that patients are cognitively and emotionally incapable of discussing, comprehending, and making decisions involving life-and-death choices immediately after the injury.[10-12] When answering the questions posed in this quadrant, it is important to discern not only whether the patient has decision-making capacity, but also whether the competent patient has been provided with adequate information to make an informed decision and whether the competent patient who gives consent does so voluntarily.

In our experience, patients and family members are unlikely to make appropriately informed decisions during this acute period. The approach we employ consists of the medical team making emergent management decisions while concurrently educating the patient and family members regarding the clinical situation.[13] The patient should be

included in the decision-making process as soon as he or she can appropriately and fully take part, as determined by clinical evaluation (including assessment of decision-making capacity) by the medical team. As the situation allows, we strive to understand the patient's wishes as well as underlying beliefs.

A further ethical consideration that arises within this quadrant is the patient-physician relationship and its role in decision making. In theory, patient preferences are at the center of an approach that focuses on respect for patient autonomy. Some authors have suggested that autonomous patients should singularly make decisions regarding their medical care.[9] However, we have observed that a major limitation of this approach is the asymmetry of patients' and clinicians' knowledge and experience. In other words, decisions made without the input of the medical team are less likely to be sufficiently informed. According to Mark Siegler, a medical ethicist and the founding director of the MacLean Center for Clinical Medical Ethics, the current era of medical decision making is best described as a shared-decision making model.[14] In shared decision making, the patient and physician work in tandem to make medical decisions for the patient. Recent studies have shown this model to result in improved patient care.[14] In line with the four-quadrant approach, we believe that decisions are best made by the patient and family with support, information, and recommendations from the medical team.

Quality of Life

Illness or injury can negatively impact quality of life (QOL). Because a principle goal in medicine is to preserve, restore, and improve QOL, it is important to discuss how treatment might affect QOL. During this discussion, the principles of beneficence, nonmaleficence, and respect for autonomy must be considered.

QOL is subjective by nature. Therefore, the determination of QOL and when it will be negatively impacted in a given case is challenging. Demetris Stavrou and colleagues conclude on the basis of their literature review that burns affect patient health-related QOL in numerous ways that are not consistently predictable.[15] Factors associated with a positive influence include early integration with activities and familial support. Negative factors include severe burns, loss of function (eg, hand function), and contracture development.[15] Despite the challenges of accurate prediction, burn surgeons should aim to determine whether therapeutic interventions are likely to positively or negatively affect QOL on a case-by-case basis using clinical judgment as well as validated measurement tools.

A frequent ethical challenge in burn care concerns medical futility and the withholding and withdrawing of care. From an ethical standpoint, interventions that are unlikely to benefit the patient should not be offered. For example, for severely burned patients with no chance of meaningful recovery, further surgical intervention may be deemed futile and therefore unwarranted. Some authors even suggest that ongoing intervention in

these cases could diminish quality of life.[16] Withholding and withdrawing treatment must also enter the discussion of the care of severely burned patients. Both options are considered ethically sound and morally permissible if no reasonable chance of survival exists and are not likely or intended to diminish quality of life.[17] This view has been supported in the burn care literature,[18] and we concur.

Contextual Features

Clinical cases do not exist in isolation but are part of a larger context that might be relevant to ethical analysis. Contextual features that can affect decision making include patient-specific factors such as family dynamics, financial resources, or religious or cultural identity; potential legal ramifications of care; and personal bias of anyone involved in the care of the patient. While often not explicit, these aspects can impact patient care and therefore must be considered.

Similar to trauma care, burn care requires many decisions to be made in rapid succession. There might not be time to reflect on the contextual features at play. Once the urgent issues have been addressed, however, a discussion of goals of care should be held that includes relevant contextual features. Particularly for cases that involve decisions regarding whether it is appropriate, warranted, or desired to proceed with further care, contextual features play a significant role. An example is the competent patient with a 70% TBSA burn who identifies as a Jehovah's Witness. Although we would typically advocate early excision and grafting, it might be advisable to stage the process to avoid large volume blood loss if indeed the patient refuses blood transfusions.

Conclusion

Many ethical issues arise in the care of severely burned patients, and several frameworks have been developed to address these issues. At the University of Chicago Burn and Complex Wound Center, we use the four-quadrant approach, as it allows for practical analysis of clinical scenarios and permits addressing complex issues systematically.

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