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Trauma Surgery Ethics

From the Editor

- Caring for the Wounded—the Ethics of Trauma Surgery** 421
Sara Scarlet

Ethics Cases

- How Should Trauma Patients' Informed Consent or Refusal Be Regarded in a Trauma Bay or Other Emergency Settings?** 425
Commentary by Ashley Suah and Peter Angelos

- How Should Complex Communication Responsibilities Be Distributed in Surgical Education Settings?** 431
Commentary by Bradley M. Dennis and Allan B. Peetz

- What Are Ethical Implications of Regionalization of Trauma Care?** 439
Commentary by Sandra R. DiBrito and Christian Jones

- Should Trauma Physicians Treat a Severely Injured Patient for the Sake of Elucidating Preferences about Organ Donation?** 447
Commentary by Sandra R. DiBrito and Macey L. Henderson

- Should Family Be Permitted in a Trauma Bay?** 455
Commentary by Matthew Traylor

Podcast

- How Trauma Systems Respond to Change:
An Interview with Dr. David Hoyt and Dr. Karen Brasel**

The Code Says

- The *Code of Medical Ethics'* Opinions Related to Urgent Decision Making** 464
Danielle Hahn Chaet

| | |
|--|------------|
| State of the Art and Science | |
| Defining “Community” and “Consultation” for Emergency Research that Requires an Exception from Informed Consent | 467 |
| Samuel A. Tisherman | |
| Medicine and Society | |
| Gun Violence Research and the Profession of Trauma Surgery | 475 |
| Allan B. Peetz and Adil Haider | |
| What Is the Institutional Duty of Trauma Systems to Respond to Gun Violence? | 483 |
| Sara Scarlet and Selwyn O. Rogers, Jr. | |
| History of Medicine | |
| The Evolving Surgeon Image | 492 |
| Heather J. Logghe, Tyler Rouse, Alec Beekley, and Rajesh Aggarwal | |
| Images of Healing and Learning | |
| <i>Memento Mori</i> and Photographic Perspective of Roadside Trauma | 501 |
| Artwork by David B. Nance and captions by David B. Nance, Sara Scarlet, and Elizabeth B. Dreesen | |
| Second Thoughts | |
| Does Family Presence in the Trauma Bay Help or Hinder Care? | 507 |
| Benny L. Joyner, Jr. | |
| Correspondence | |
| Metaphorically or Not, Violence Is Not a Contagious Disease | 513 |
| Michael B. Greene | |
| Response to “Metaphorically or Not, Violence Is Not a Contagious Disease” | 516 |
| Gary Slutkin, Charles Ransford, and Daria Zvetina | |
| About the Contributors | 520 |

FROM THE EDITOR

Caring for the Wounded—the Ethics of Trauma Surgery

In a fraction of a second, trauma changes us. Trauma injures organs, fractures bones, and makes us bleed, but it also leads to suffering, demoralization, and fear. While physical injuries can often be neatly classified, emotional and spiritual injuries cannot. These burdens are shouldered by many, not just those who are physically injured. Families, friends, communities, and even those who care for the injured are also wounded.

Trauma professionals' decisions can change us, too. Trauma surgeons must make high-stakes decisions, often in rapid succession and without knowledge of a patient's identity or history. In our field, the "golden hour"—the hour just after an injury when medical care is most likely to prevent death—is dogma [1]. For this reason, action almost always outpaces deliberation. Choices such as whether to give blood, go to the operating room, amputate, or try to salvage a mangled extremity are often made without an understanding of our patients' life goals and values. As a result, we almost always sacrifice respect for autonomy in favor of what we presume to be our patients' best interest.

Just as the treatments we provide may prioritize best interest over autonomy, so the structure of spaces in which we practice prioritize functionality over comfort. Trauma bays, by design, are utilitarian. They help clinicians assess and treat patients in a systematic, streamlined manner. Patients lie underneath bright lights, surrounded by dozens of unrecognizable clinicians who shout observations and instructions above the cacophony. To the untrained observer, the trauma bay is hectic and perhaps cruel. To the specialist, it is specifically designed to give us the power to save lives. However, providing care in this manner is not without costs—it is possible that medical interventions retraumatize patients or that the treatments provided are not congruent with patients' wishes. How, then, can we maximize the benefits of our care while minimizing these associated burdens?

This issue of the *AMA Journal of Ethics* will explore the ethics of urgent decision making in trauma settings, what it means for clinicians to approach decisions responsibly, and what it means for patients and their loved ones to have the aftermath of decisions communicated with clarity and compassion. This issue also will explore what trauma care policies can mean for public health, community planning, and resource allocation.

When ethical dilemmas do occur, clinicians must quickly weigh the risks and benefits of their actions along with the little they know of their patients. Clinicians practicing this “speed ethics” cannot rely on careful deliberation and discussion typically used in ethical decision making. Our patients are frequently unable to engage in informed consent discussions. Often, there is simply no time. Ashley Suah and Peter Angelos discuss the [nature of consent](#) in the trauma bay—which is presumed rather than requested—through examination of the case of a patient who resists being intubated. Although this practice allows trauma surgeons to expeditiously provide lifesaving care, for those unaccustomed to trauma care or to physicians in training, it can be viewed as paternalistic.

Just as we care for patients, so we care for their families who often have been traumatized by the events—such as car crashes or violence—that brought their loved one to a trauma center. It is crucial that we take family members’ emotional state into consideration as we communicate with and chaperone them in health care settings. Despite the importance of conducting these difficult conversations skillfully, surgical training tends to deemphasize acquisition of communication skills, instead assigning greater priority to the technical aspects of care. In their communication with families, how can surgeons balance clarity and compassion against the need for swift, high-stakes decisions? Bradley M. Dennis and Allan B. Peetz examine challenges trainees face in communicating medical information and [discussing goals of care](#) with families in a case of imminent brain death.

Sometimes, family members wish to accompany patients as they receive trauma care in an act of support or perhaps even closure. Benny L. Joyner, Jr., draws on the literature and his experience with [family presence](#) in the pediatric intensive care unit to explore the benefits and burdens of allowing family members to be present during their child’s resuscitation. In his winning essay for the John Conley Ethics Essay Contest, Matthew Traylor argues that family presence during cardiopulmonary resuscitation and in the trauma setting are not completely analogous but that the latter can be ethically justified if [chaperoning systems](#) are in place.

When trauma care is not life saving, ought clinicians to prioritize organ recovery? For patients who have not specified their wishes related to organ donation, and sometimes even for those who have, how should we discuss these topics with families in the wake of trauma? In analyzing a case of a young trauma patient who dies with no family present, Sandra R. DiBrito and Macey L. Henderson discuss hospital procedures for [communicating about organ donation](#) and the need to uphold the principles of nonmaleficence and respect for patients and families.

Trauma care professionals in all settings must use resources judiciously, as allocation of these resources can influence a patient’s course, although resources vary within and

between regions. Health care professionals know that within rural areas or urban “trauma deserts,” proximity to a trauma center can influence mortality [2]. Higher-level-of-care transfers to trauma centers, which occur frequently as a result of regionalization of trauma care, also utilize precious resources. DiBrito and Christian Jones analyze a case in which [regionalization of trauma care](#) has potentially influenced a patient’s course, arguing that trauma professionals ought to regard transfer as an element of trauma care, rather than a delay in care, as they make critical decisions.

What is the role of the trauma surgeons outside of trauma bays and acute care settings? Peetz and Adil Haider argue that trauma surgeons have a [special moral obligation](#) as well as a professional responsibility to engage in gun violence prevention and advocacy. I and Selwyn O. Rogers, Jr., explore the duty of trauma centers not only to treat those who suffer violent injuries but also to engage in [violence prevention efforts](#) in order to help stop the cycle of violence that plays out, in part, under the bright lights of the trauma bay. And Samuel A. Tisherman examines the challenges that [trauma researchers](#) face in defining and reaching out to the relevant at-risk community.

Patients’ and other clinicians’ perceptions of trauma surgeons can set the tone for their interactions with trauma surgeons. Unfortunately, [misperceptions and stereotypes](#) can lead to implicit bias, as discussed by Heather J. Logghe, Tyler Rouse, Alec Beekley, and Rajesh Aggarwal. They argue that though the classic stereotype of the abrasive white male surgeon continues to influence surgeons’ interactions with colleagues and patients, social media movements and an inclusive interpretation of history are challenging this stereotype.

For those affected by trauma, the location of the event or “the scene,” as clinicians providing trauma care call it, can become a powerful symbol of the human condition and of loss. According to photographer David B. Nance, these spaces “confront us with the reality of death as an actual event that arrives for a particular person, at a particular place, at a particular time” [3]. Nance’s powerful collection of images of Descansos, or [roadside memorials](#) to people who have died as a result of motor vehicle collisions, were collected as part of his exploration of these sites throughout the American West, and Nance, I, and Elizabeth B. Dreesen reflect on their implications for trauma care.

Finally, in the podcast, Karen Brasel and David Hoyt discuss how [trauma systems](#) have developed over time and how they respond to the changing needs of patients and communities. They explore how trauma surgeons are incorporating geriatric trauma care into their practice as a result of the growing population of elderly patients and outline other ways that trauma surgeons can promote health equity in their work.

Trauma bays are at the nexus between health systems and the diverse communities in which they are located. As a result, trauma care lies at the intersection of public health

and the health and well-being of individuals. This issue of the *AMA Journal of Ethics* aims to help guide trauma surgeons in their work at the intersection of clinical practice, ethics, and public health.

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ETHICS CASE

How Should Trauma Patients' Informed Consent or Refusal Be Regarded in a Trauma Bay or Other Emergency Settings?

Commentary by Ashley Suah, MD, and Peter Angelos, MD, PhD

Abstract

The precipitous and unexpected nature of trauma requires training health care practitioners to think and act quickly, according to the best medical interest of the patient. The urgency of treatment for trauma patients, who frequently have temporary alterations in their abilities to make autonomous and competent decisions, often results in *presumed* consent for medically necessary treatment. Academic trauma centers use protocol-based management of injuries to facilitate their simultaneous evaluation by multiple clinicians and to avoid delays in treatment, ensuring that trauma patients receive the best possible care. In this article, we will discuss the issues of deferred informed consent and surgical education as they relate to trainees' graduated responsibility in the trauma bay.

Case

Mr. X is a 39-year-old man rushed to a North Carolina teaching hospital after a motor vehicle collision. He was the unrestrained driver of a semi that collided with a utility pole. First responders at the scene found him approximately 50 feet away from the vehicle lying in a ditch.

On initial presentation to the trauma bay, Mr. X has a blood pressure of 90/52, heart rate of 123, and an oxygen saturation of 87 percent despite receiving 100 percent oxygen via facemask—the maximum concentration of supplemental oxygen that can be delivered. He is in obvious respiratory distress. Physical exam is notable for flaccid paralysis, which might suggest that Mr. X has a spinal cord injury. The senior surgical resident, Dr. S, performs the primary and secondary survey, standardized exams used to identify and manage life-threatening injuries in the trauma bay. Mr. X's respiratory distress and oxygen saturation levels become worse, so Dr. S prepares the trauma team for emergent intubation and mechanical ventilation. Although an intubation would normally be performed by the in-house attending trauma surgeon, Dr. F, she is currently unavailable as she is responding to another patient's cardiac arrest. Dr. S is comfortable intubating Mr. X, and the team prepares to assist her. As Dr. S quickly explains this plan to Mr. X,

who appears frightened and does not seem to agree, he states, “Don’t intubate me,” and his comment is heard by the entire trauma team.

The respiratory therapist continues to prepare the ventilator and obtain tools for intubation. She points toward the monitor at Mr. X’s diminishing oxygen saturation level, now 85 percent. “He’s hypoxic—we can’t *not* intubate. He’ll die if we don’t.” She passes the laryngoscope to Dr. S, who wonders what to do.

Commentary

The practice of informed consent is a legal concept based on the belief that adults of sound mind have the right to bodily self-determination [1, 2]. Outside of emergent circumstances, it is the physician’s responsibility to provide a medical recommendation, explain the nature of the recommended intervention, and discuss its risks and benefits as well as possible alternatives to treatment [1-3]. Patients must have been offered an explanation of the recommended treatment and its associated risks for patients to be considered informed; they should be provided enough information to agree to or refuse a procedure [2, 3]. The process of obtaining informed consent should be a meaningful conversation between a physician and patient rather than simply have as its goal a signature on a document.

Patient understanding relies upon adequacy of physician disclosure, the patient’s mental status and [decision-making capacity](#) at the time of the discussion, and social determinants of health such as education. Given the realities of providing emergency care to patients, it is not surprising that informed consent discussions are often rushed, abbreviated, or completely removed from acute settings in order to expedite medical treatment [4].

There are very few exceptions to the need for consent to medical treatment. One of the well-known reasons *not* to obtain informed consent is a [medical emergency](#). In the setting of acute or traumatic injury, patient understanding is easily jeopardized by fear, anxiety, pain, medications, and physiological derangement, resulting in unreliable decision making. Delirious or unconscious patients lack capacity and cannot provide consent. In these cases, it is a physician’s duty to seek consent from a suitable surrogate. However, in some cases, even getting consent from a surrogate is excused if the surrogate is not immediately available and waiting to find the surrogate would cause harm to the patient by delaying care [3]. Thus, responsibility is placed upon the physician in these cases to act in the patient’s best interest and proceed with the appropriate medical interventions. It is important to recognize that physicians’ personal beliefs and possible concerns related to litigation can influence the decisions they make for their patients. However, in emergency situations, when there might be no available surrogate decision makers, the physician must act in a manner that will provide the maximum possible benefit and the best outcome for the patient.

Should Mr. X Be Intubated?

Mr. X arrives in the trauma bay in shock. His injuries and poor clinical status upon arrival are concerning and appropriately alert the trauma team that he has likely sustained multiple life-threatening injuries. However, based on his age and profession, we can assume that he was likely an independent, fully functional person prior to this injury. Considering functional outcomes, we can expect him to make a full recovery following resuscitation, operative intervention, and post-operative physical therapy. With consistent social support and posttraumatic counseling, we can hope for meaningful emotional and mental restoration as well.

Following her initial evaluation, Dr. S quickly recognizes that Mr. X is demonstrating signs of impending respiratory failure. Securing an adequate airway is one of the most essential skills a trauma surgeon can master, as without the ability to reliably ventilate or oxygenate patients, severe disability and death are inevitable. Progressive hypoxia despite receiving the highest dose of supplemental oxygen, accompanied by hypotension, tachycardia, and signs of a possible spinal cord injury, provide Dr. S with enough clinical substantiation to intubate Mr. X.

Dr. S is confident in her decision to proceed with intubation until Mr. X declares that he does not want to be intubated. There is no time to explore Mr. X's refusal of this intervention and, unfortunately, there are no accompanying family members or other surrogate decision makers present to speak on the patient's behalf. Dr. S is conflicted, as she wishes to respect Mr. X's autonomy but also feels a responsibility to save his life.

In this specific instance, the patient's understanding of his critical clinical status must be called into question. Based on his blood pressure and heart rate, he is in stage III shock, meaning that he has likely lost 30-40 percent of his total blood volume. His respiratory status is seriously compromised, and it has been well established that at this stage of shock patients are anxious and confused [4-6]. If Dr. S believes that the complexity of Mr. X's current injuries have left him without decisional capacity, she should proceed with intubation in order to save his life.

In situations in which there is uncertainty or disagreement among trauma team members, as in this case, progression in care should be guided by trauma protocols. Application of trauma protocols can streamline decision making in highly stressful patient encounters. These protocols are implemented in an effort to standardize the evaluation and treatment of severely injured patients. The goal is to avoid errors in diagnosis while facilitating efficient, yet thorough, assessment. These protocols are learned and practiced by all members of the trauma team (e.g., respiratory therapists, physicians, and nurses) in order to allow concurrent evaluation by multiple care professionals upon a patient's arrival in the trauma bay. The collaborative goal of the

interdisciplinary trauma team should always be to provide the patient with the best possible outcome.

Challenges in Training Surgeons to Become Competent Decision Makers

Victims of trauma represent a physically, emotionally, and mentally vulnerable population whose life-threatening conditions jeopardize self-determination. Providing quality care for patients who have sustained traumatic injuries, specifically in the setting of academic trauma centers where junior and senior surgical residents are trained to become confident and competent decision makers, poses special ethical challenges. Trauma surgery affords [surgical trainees](#) unique opportunities to develop clinical reasoning skills and technical proficiency in stressful, time-sensitive situations. Academic medical programs mandate that attending physician supervision is required at all resident levels, while acknowledging the significance of practicing graduated responsibility [7, 8].

At our institution, when critically ill patients arrive in the trauma bay, the residents are responsible for conducting the examination, ordering tests, resuscitating the patient, and performing any necessary immediate procedures, such as chest tube or central line placement. Typically, a senior resident who has previously demonstrated proficiency in these areas will serve as the “team leader” by directing the other members of the trauma team through resuscitation and performance of procedures. Opportunities to make independent decisions are imperative to the development of surgical residents; however, adult level I trauma centers require that an attending trauma surgeon actively participate in all major therapeutic decisions and in management of all critically injured patients [9]. Thus, as trainees are running the trauma codes, an attending trauma surgeon is also present in the trauma bay, overseeing all of the resident’s instructions as well as performance of all of the procedures. Having an attending physician present to provide direct supervision ensures patient safety and facilitates opportunities for immediate feedback for trainees. Attending physicians might step in to take over a procedure or offer an additional option for medical management to ensure the best outcome for the patient. As surgical residents demonstrate acquisition of sound surgical judgment, the extent of attending physician supervision decreases, fostering resident autonomy.

Despite the 24-hour presence of attending trauma surgeons at academic trauma centers, there are often circumstances when the attending trauma surgeon cannot be physically available to supervise residents as they provide care for critically ill patients. In Illinois, for example, senior surgical residents are permitted to initiate resuscitation of patients while awaiting the arrival of the attending surgeon; however, they cannot act independently from the attending surgeon [10]. In our experience, inability to provide direct supervision is usually due to an attending surgeon’s commitment to caring for another critically injured patient. This recognized dilemma in academic trauma centers has been somewhat remedied with the use of electronic communication devices such as

paggers and hospital-issued cellular phones. Residents can call in to the operating room from the trauma bay or call the designated “attending-on-call” phone to notify the attending surgeon about critical patients that require immediate intervention. This protocol allows the attending surgeon to provide indirect supervision and to counsel the resident remotely. In this case, Dr. S should instruct one of her team members to try to contact Dr. F to notify her of the need to intubate Mr. X. Regardless of whether Dr. F can be reached, Dr. S must decide whether she can proceed with intubation confidently without direct supervision. Her thought process demonstrates that she is capable from a clinical and technical standpoint. Realizing that Mr. X is disoriented secondary to his severe injuries, she should be confident from an ethical standpoint that she is acting in her patient’s best interest by proceeding with intubation.

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Ashley Suah, MD, is a general surgery resident at the University of Chicago. Her main interest related to surgical ethics involves the relationship between the trauma surgeon and the patient who has been subjected to violence. Specifically, she seeks to gain a deeper understanding of the stance surgeons take regarding the pathogenesis of urban trauma beyond the operating room and intensive care unit.

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ETHICS CASE

How Should Complex Communication Responsibilities Be Distributed in Surgical Education Settings?

Commentary by Bradley M. Dennis, MD, and Allan B. Peetz, MD

Abstract

Part of any trauma surgeon's job is communicating effectively in difficult, often time-limited, situations. The ability to effectively discuss topics like goals of care in these settings has a direct effect on patient care. Many factors contribute to the complexity of these conversations, including patient, physician, surrogate, and system-specific factors. In responding to the case of Mr. D and Dr. J, we attempt to outline and analyze some of the moral challenges and ethical questions that this professional responsibility poses to trauma surgeons and trainees.

Case

Mr. D is a 19-year-old man severely injured after his motorcycle collided with oncoming traffic. He was not helmeted—either because his helmet came off or because he was not wearing one—at the time of the collision. He was unresponsive and intubated at the scene. Initial trauma workup reveals a Glasgow Coma Scale score of 3T, indicative of severe traumatic brain injury, although he received no medications from emergency medical service professionals in the field or while being transported to the emergency department. After being initially stabilized in the trauma bay, Mr. D was transferred to the surgical intensive care unit (SICU). A head computerized tomography (CT) scan obtained just prior to transfer reveals significant intracranial trauma including multiple foci of intracranial hemorrhage, mild midline shift (movement of the brain or part of the brain past its center line), and a moderate-sized subdural hematoma. Aside from his severe intracranial injuries, Mr. D has no major intrathoracic or intra-abdominal injuries. He continues to be unresponsive to noxious stimulation but has pupillary constriction, and he is breathing spontaneously on the ventilator, indicating exceedingly poor brain function but not brain death.

Dr. J is the second-year resident physician in the SICU who performed Mr. D's initial neurosurgical examination and is taking care of him. Dr. J has spoken with Dr. S, the chief neurosurgical resident, about Mr. D's poor prognosis. Based on Dr. S's assessment, Mr. D suffered devastating intracranial injuries and has little hope for meaningful recovery. Dr. J and Dr. S discuss Mr. D's case and consider whether a decompressive craniectomy (a partial skull removal that would allow expansion of a swelling brain) would help him.

After further deliberation, however, they agree that it would probably not. No surgery is planned, and Dr. S plans to talk to the attending physician about Mr. D in the morning.

At 2 a.m., Mr. D's mother, father, siblings, and extended family arrive. His bedside nurse asks Dr. J to provide Mr. D's family with an update and escorts Mr. D's family to the conference room. Dr. J has never led a discussion with a patient's family about the goals of care, and she hesitantly agrees to meet with Mr. D's family. Dr. J clarifies that it is likely that Mr. D's injuries will result in brain death. "Brain death?" Mr. D's mother asks as she begins to weep, "What's that?" Dr. J ponders how to explain brain death to the grieving mother. Then Mr. D's father, who introduces himself as a family practice physician, asks Dr. J if there is anything the team can do to save his son. He has heard about decompressive craniectomy helping "brain-injured" patients and asks whether this procedure can be done. Dr. J states that she and Dr. S considered it and agree that this procedure would not benefit Mr. D. Mr. D's father then asks, "And your attending physician agrees?" Dr. J wonders how to respond.

Commentary

The case of Mr. D. and Dr. J highlights some relevant issues in ethical communication and surgical education. Communication is a professional duty of all physicians. McCullough notes that sound, trustworthy information is a patient right [1]. Dr. J has never led a family discussion about goals of care and is understandably hesitant. However, she is correct in proceeding with the family update despite never having done it before. Alternatively, she could call her attending physician (who presumably is not in the hospital) to come in and have the goals-of-care discussion with Mr. D's family. This would have left Mr. D's family sitting at the hospital, maybe even at their son's bedside, without any update or information for an extended period of time. Given the nature of the patient's injuries, progression to [brain death](#) prior to the arrival of the attending physician is also possible. In this case, it is important to have the goals-of-care discussion as soon as possible. Dr. J's inexperience, combined with her respect for surrogate autonomy, presents a dilemma for Dr. J and the potential for missteps in communication.

Factors in Poor Communication

Communication, in and of itself, is not really an ethical issue. When effective, it can be a vehicle that facilitates good ethical decision making. Unfortunately, the opposite is true as well. Poor communication can lead to ethical dilemmas and poor ethical decision making. The reasons for poor communication in end-of-life care are multifactorial [2, 3]. Patient, physician, surrogate, and system-specific factors are all contributors to the complexity of the communication.

Patient factors. A few patient-specific factors are relevant, and chief among these factors is the sudden, severe nature of a patient's injuries. Such injuries result in loss of patient

decision-making capacity, a major factor in the complexity of communication. The patient's pre-injury state of health, the patient's value system, and what the patient would consider an acceptable quality of life are also significant contributors. In this case, none of these contributing patient factors is known, although it can be assumed that Mr. D was most likely healthy since he was 19 years old and riding a motorcycle. Previously healthy patients who suffer catastrophic injuries that will significantly alter their quality of life will likely have perspectives on quality of life that are very different from those of chronically ill patients who sustain similar injuries. Each of these cases presents different communication challenges.

Physician factors. There are numerous physician-specific factors that affect communication in these kinds of situations, and this case highlights two of them: relevant experience in discussing end-of-life issues and the ability to impart pertinent information. Dr. J lacks clinical experience but also experience in holding difficult conversations. It is important for her to provide clear medical information about the total injury burden and prognosis. Dr. J recognizes the need for input from a more experienced surgeon such as Dr. S, the neurosurgery chief resident. The information exchanged between Dr. J and Dr. S was useful because it included information that any meaningful discussion about goals of care requires, including specifics of the injury and current condition, the patient's prognosis, and treatment options [3]. The end result of this conversation between these two residents is that surgery is not an option for this patient. Unfortunately, this same conversation does not take place with the neurosurgery attending physician in order to verify that this is the best course of action for this patient. This failure to close the loop presents both moral and medicolegal issues that are related more to the medical training paradigm than to communication or end-of-life care. Suffice it to say that a decision as consequential as the decision to operate (or not operate) ideally should be vetted by an attending surgeon. In situations in which the decision to operate is closely linked to decisions regarding end-of-life care, it becomes absolutely essential to have the attending surgeon confirm the plan. In this case, Dr. J should confirm the plan with the attending surgeon by phone rather than deferring the conversation until the surgeon arrives in the morning.

Surrogate factors. Surrogate decision-maker factors are also some of the most challenging ones in difficult conversations. [Surrogates](#) are often unprepared to be thrust into the role of decision maker. They may have little or no knowledge of the patient's desires regarding advance directives. This is especially true of younger patients and trauma patients like Mr. D. Emotions are a tremendously important factor to consider in these conversations. They affect surrogates' ability to think and process information as well as their ability to make decisions. Surrogate cognitive ability and familiarity with the medical environment can be important factors to consider as well. In this particular case, the experience of Mr. D's father as a family physician is an important detail for Dr. J to consider. The mature practitioner who leads these discussions recognizes that these

factors can be helpful or harmful in these conversations. Using some medical terminology in conversation can give the false impression of medical literacy that can easily be misinterpreted by treating physicians. Therefore, communication expertise involves developing skills to confirm that information is understood correctly while simultaneously facilitating a natural and open flow to the conversation. As a physician inexperienced in leading difficult conversations, Dr. J should focus on the immediate issue, which is the goals-of-care conversation. She should proceed using language that is clear and easy for all members of the family to understand.

System factors. There is a pair of system-specific barriers to effective communication that are present in this scenario: time constraints and inexperience of the on-call team. When Mr. D's family arrives, it is appropriate to provide them with an update on their son's condition even though it is the middle of the night. Ideally, the attending physicians for the SICU and the neurosurgery team would lead this conversation. But, in this case, waiting until morning would likely worsen the fears and anxieties of Mr. D's family and would delay communicating critical information that is already available. Unfortunately, it is one of the realities of trauma and surgical critical care that resident-led family meetings are both unavoidable and essential. This fact points to the need for intentional education for surgical trainees in this key area. Junior residents themselves acknowledge much more anxiety than senior residents when faced with having difficult conversations with patients or families [4]. This anxiety is often related to uncertainty about the patient's diagnosis or prognosis [5].

Communication Education for Trainees

The need for formalized and intentional education of trainees in this particular area has been recognized across medical specialties [4-11]. To date, no large-scale studies on communication skills training for difficult conversations has been performed, but smaller studies show promising results [5, 9-11]. [Simulation](#) and case-based discussion modules have both been described in the literature [5, 6, 9-11]. A well-rounded training model in this area likely requires a multifaceted approach with a tiered progression of responsibility. Didactic lectures, simulations, and case-based discussions should provide a good foundation. On clinical services, though, a tiered progression of trainee responsibility seems most logical. Initially, this would likely begin with observation of attending surgeons and senior residents adept at this type of communication. Then partial participation, likely starting conversations with less severely ill patients, can occur under direct supervision. Ideally, this training would progress to more involvement of the trainee as competency is demonstrated, culminating with the trainee leading a discussion about severely ill patients with family or surrogates, again under adequate attending supervision. This tiered progression of responsibility would equip the resident physician to independently lead difficult conversations before being thrust into a difficult situation, as in this case, because of the attending physician's absence.

A key component of this approach is defining the core communication competencies for leading difficult conversations. At present, there is no widely accepted standard. A number of authors have attempted to define these competencies in a series of small trials and in recommendations based on expert consensus [2, 3, 6, 11]. Table 1 shows a list of suggested core competencies adapted from these publications. Demonstrating competency in conducting difficult conversations requires skill in both verbal and nonverbal communication. Specific components integral to verbal communication include clear transmission of information, appropriate empathic acknowledgment, and providing the opportunity to ask questions. Nonverbal skills are also essential to reflect the importance of the conversation, to demonstrate reflexive listening, and to provide appropriate emotional support.

Table 1. Core Competencies for Leading Difficult Conversations [2, 3, 6, 11]

| Nonverbal skills |
|---|
| Chooses an appropriate location for meeting Sits down with family Makes good eye contact Uses good posture and body language Demonstrates care and concern through tone of voice and pace of conversation Allows some silence for family to absorb information Uses reflexive listening skills |
| Verbal skills |
| Leads introductions of all parties present (clinicians and family) Gives news in direct, succinct manner Explains information clearly, using appropriate language (avoids jargon) Is respectful of patient Offers emotional support Asks open-ended questions Acknowledges emotions of family and patient Attempts to elicit treatment goals and expectations States prognosis clearly Discusses treatment options Restates and summarizes as needed Invites questions |

Addressing Futility

This particular scenario suggests the patient’s father’s concern about futility; the case states that he asks “if there is anything the team can do to save [my] son.” Concern about futility seems to underlie the residents’ decision to forego surgical intervention.

There are generally considered to be two types of futility, quantitative and qualitative [12], and the distinction between these types of futility is germane to the moral dilemma faced by Dr. J. Quantitative futility refers to the inability of an intervention to achieve the intended physiological outcome. In this scenario, the decompressive craniectomy is intended to decrease intracranial hypertension, which is possible, so would not be futile in a quantitative sense [13]. Qualitative futility, on the other hand, is the term applied to an intervention that results in an outcome that is below a standard that the patient would consider acceptable [14]. Discussions about qualitative futility are often more complex and more individualized as they center on things like benefit to the patient and quality of life. In this case, the family wants to know if anything can be done “to save” their son. This question is much more difficult question to answer because it’s unclear what exactly Mr. D’s father means by “save.” Is saving merely maintaining pulse? Does it mean restoring Mr. D to his pre-injury functional status? Perhaps it is somewhere in between. In this scenario, Dr. J tells Mr. D’s family that decompressive craniectomy “would not benefit Mr. D.” Without having a conversation with the family about what would be an acceptable outcome, it would be difficult for Dr. J to know whether the procedure would in fact benefit the patient. To address the family’s question of what can be done to save Mr. D, it would have been more appropriate for Dr. J to discuss the available treatment options and expected outcomes of each. This approach could have provided information that could have allowed the family and Dr. J to determine whether any of the available treatments could result in outcomes that the patient would consider acceptable.

Conclusion

Leading complex, highly emotional conversations involving brain death and severe traumatic brain injury is fraught with communication challenges. These conversations often involve issues beyond the medical issues being discussed. Ethical considerations such as quantitative futility, qualitative futility, respect for patient or surrogate autonomy, and surrogate decision making are all prominently featured in end-of-life conversations. Inadequate communication can make these ethical considerations problematic. Patient, physician, surrogate, and system-specific factors all can potentially contribute to inadequate communication. The urgency of trauma situations often thrusts trainees into a lead role before they are entirely ready to lead. At present, most trainees, both surgical and medical, are not given adequate formal training in leading difficult discussions about end-of-life care [4, 5, 7, 8, 10]. As a result, they are justifiably anxious about engaging in these conversations. These considerations underscore the importance of a multifaceted educational approach to communication that begins early in training and emphasizes tiered responsibility.

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ETHICS CASE

What Are Ethical Implications of Regionalization of Trauma Care?

Commentary by Sandra R. DiBrito, MD, and Christian Jones, MD, MS

Abstract

Outcomes for severely injured patients are improved when they are treated at trauma centers. However, interfacility transfers can delay time-sensitive treatments not requiring the resources of tertiary institutions. Regionalized trauma systems allow physicians to decrease delays in care, prevent inadequate treatment, and ultimately reduce preventable deaths. Although precise risks and benefits of triage choices are unknowable, estimating them is a process well known to surgeons. Recognizing patient transfers as integral to optimal care delivery systems, rather than as detracting from them, is essential.

Case

Mr. F is a 52-year-old man initially evaluated at a 100-bed hospital in rural New Hampshire staffed by two general surgeons, one of whom is on vacation. He sustained multiple stab wounds to his right flank during a home invasion while fighting the intruders to keep them away from his family. Mr. F arrived at the hospital in extremis, near death. Dr. G, the on-call surgeon, is called at home by Dr. A, the emergency department (ED) physician. Dr. G has just returned home after operating for most of the past 20 hours. As Dr. G and Dr. A discuss details of Mr. F's case, they consider implications of performing a laparotomy (an exploratory abdominal surgery to identify and fix or temporize injuries) on Mr. F. There are approximately 20 units of blood available for use at the hospital, an amount unlikely to be enough if Mr. F has major intra-abdominal bleeding. Additionally, prior to taking Mr. F to the operating room (OR), Dr. G would need to wait for on-call OR staff to arrive from home. Dr. G recognizes that Mr. F might not survive the time it would take to mobilize the OR staff and organize the necessary equipment for the operation.

Dr. G requests that Mr. F be transferred to an institution that can offer him a higher level of care. Dr. A's team begins calling level I trauma centers in the region in order to arrange Mr. F's transfer. The first two level I trauma centers contacted do not have an available intensive care unit (ICU) bed. Additional calls take several minutes. Finally, Dr. B, the on-call attending physician at the third—and farthest away—level I trauma center accepts Mr. F to be a patient after a short discussion with Dr. A. Dr. B recommends that the on-call surgeon, Dr. G, perform the laparotomy, followed by immediate transfer to the ICU.

Dr. G insists that she is not comfortable with performing an emergent laparotomy on Mr. F because it would take too long to mobilize OR staff and because OR equipment and blood available for transfusion is limited.

It takes nearly one-and-a-half hours for Mr. F to arrive at Dr. B's trauma bay via ground transport. Massive transfusion protocol is initiated upon arrival to try to compensate for his blood loss. Focused assessment with sonography for trauma (FAST) examination (a quick abdominal ultrasound to identify intra-abdominal hemorrhage after traumatic injury) reveals a massive intra-abdominal fluid collection. Mr. F is taken emergently to the operating room for exploratory laparotomy by Dr. B.

Upon entering the abdomen, Dr. B encounters several liters of blood, recognizes severe hepatic injuries, notices that venous blood rapidly arises from beneath the liver, and thus suspects that Mr. F has a retrohepatic caval injury (an injury to the largest vein within the abdomen, the inferior vena cava, which is fatal if not repaired). Within minutes, Mr. F suffers cardiac arrest. The team begins cardiopulmonary resuscitation (CPR). Despite intra-abdominal packing and massive transfusion, Mr. F's intra-abdominal bleeding cannot be controlled, CPR is stopped, and Mr. F dies on the OR table.

Dr. B walks out to the waiting room to speak with Mr. F's family members, who are visibly traumatized after having their home invaded and watching Mr. F succumb to the intruders' violence. His daughter asks how he's doing and Dr. B prepares to respond, wondering about the many decisions that led to Mr. F's outcome.

Commentary

Trauma centers have unique resources, whereas hospitals without trauma center designation must use their limited resources carefully, balancing treatment of trauma patients against other needs in their hospital. Establishing formal regionalized trauma systems is intended to decrease delays in care and prevent shortages at smaller, critical access centers, which benefit from transferring seriously injured patients to trauma centers. When triaging critically injured trauma patients at nontrauma centers, it is imperative to evaluate the risks and benefits to the patient of transfer or local treatment. Care of trauma patients is extremely time sensitive, and often triage decisions must be made without complete knowledge of all the patient's injuries. After the case is triaged, decisions are prone to retrospective second guessing, which can lead to beneficial, critical evaluation of decision-making processes and, unfortunately, to finger pointing and blame. Communicating adverse outcomes to both families of victims and referring physicians requires appreciating the many considerations made in a triage situation and understanding that transfer of a patient is not equivalent to patient abandonment or failure to treat.

Trauma Center Resources and Requirements

Trauma centers are state-designated institutions intended to provide emergency care to injured patients. In 1976, *Optimal Hospital Resources for Care of the Injured Patient*, by the American College of Surgeons Committee on Trauma (ACS-COT), first described criteria for the categorization of hospitals as trauma centers [1, 2]. The current tiered system typically designates centers as level I-IV, placing importance on optimal outcomes and distribution of resources. To be verified according to the ACS-COT criteria, level I trauma centers are required to deliver comprehensive care, with a wide array of specialists being promptly available, and must participate in education, prevention, and research initiatives [1]. Level I trauma centers are also required to treat a standardized minimum number of injured patients annually to provide high-volume experiences for the institution's clinicians and care delivery system [1], as high surgical volume has been linked to improved patient outcomes [3]. Another ACS-COT criterion is the hospital's role as a referral center from surrounding areas [1]. A center that upon regular review does not meet state standards for trauma center designation—which are often based on ACS-COT's stringent criteria [4]—could lose its trauma center designation.

Critical Access Hospitals

More widely distributed critical access hospitals provide 24-hour emergency care to rural communities, are at least 35 miles from other hospitals, and require patient transfer agreements with other acute care hospitals [5]. Although the treatments they deliver range from stabilization of life-threatening injuries to management of chronic illnesses, their resources are limited. Facilities designated as critical access hospitals must have no more than 25 beds [5]. Critical access hospitals are responsible for diagnosing and treating a broad range of presentations and must triage appropriate cases to higher levels of care. Unfortunately, rural critical access hospitals, with their resource limitations and relatively low volume of significantly injured patients, have worse outcomes for common clinical conditions than urban acute care hospitals [6]. Staff capability is not the limiting factor at these centers, however, because skill sets of critical access physicians are necessarily different than those of subspecialized physicians.

Trauma Centers

Compared to other hospitals, trauma centers have significantly better outcomes for severely injured patients [7]. Even within trauma systems, however, there is significant variability in outcomes associated with patient volume. One study found that patients with penetrating abdominal injuries in shock (like Mr. F) were 98 percent more likely to survive when treated at a hospital seeing more than 650 trauma patients per year [8]. However, the majority of trauma cases result from blunt mechanisms, and one study demonstrating improved outcomes at high-volume trauma centers saw benefits only for patients who sustained blunt injuries [9].

For much of the public, this tiered system of trauma care is invisible. Patients might only discover the variability between critical access centers, lower tier trauma centers, and higher tier trauma centers when told they will be transferred, and, even then, the design of the system is opaque from the perspective of the patient. Emergency medical services (EMS) clinicians are instructed initially to transport patients to the “nearest appropriate facility” and must make judgments like other clinicians in deciding where to take injured patients. While these choices are traditionally left to clinicians with input from patients and families, communities are beginning to recognize differences in available resources. For example, underserved communities on the South Side of Chicago pled specifically for a trauma center in their region for several years, eventually gaining approval in 2017 and bringing the distinction between designated trauma centers and critical access centers into the national spotlight [10].

Ethical Issues Associated with the Growing Regionalization of Trauma Care

The trauma care tiered system differs from more recent health care regionalization exemplified by “centers of excellence” employing high-volume surgeons with a narrow scope of practice [11]. Successful trauma care is largely time sensitive; shortening the time from injury to definitive care is expected to produce better outcomes [12]. This “golden hour” model, in which the quality and appropriateness of treatment in the first hour of care influences patient prognosis, is the basis of trauma regionalization. In order to reduce delays, prevent inadequate care, and reduce preventable deaths, critically injured patients are rapidly triaged to higher-level trauma centers. One of the foundational studies in trauma regionalization (conducted over 30 years ago) found that simply regionalizing care reduced preventable deaths from 13.6 to 2.7 percent and suboptimal care from 32.0 to 4.2 percent of cases [13].

Equitable care. The most important ethical feature of a regionalized care system is the assurance that best care is provided equitably across a large demographic of patients to achieve the best overall outcomes. Such care includes [fair allocation of scarce resources](#) within the hospital, such as blood products, medications, or specialist services. There are competing ethical arguments regarding the allocation of these resources. In this case, if the hospital’s limited resources are depleted rapidly while caring for Mr. F, the risk of detriment to other hospitalized patients could increase; if Mr. F receives all the facility’s blood, the principle of distributive justice would be challenged if a postoperative patient with moderate anemia is unable to receive a transfusion and develops a myocardial infarction. In contrast to this utilitarian argument, the “rule of rescue” has been used to justify life-saving, heroic treatment efforts in patients at risk of imminent death, regardless of the resources required [14]. These efforts align with traditional Western medicine ideals of preventing death and disability if means are available. If the rule of rescue is followed, triage is part lottery, with a first-come-first-served element to resource allocation [14].

System evaluators must also consider the risks of overtriage—overestimating injury severity and giving priority to patients who do not need additional resources. The overtriage rate is the proportion of patients who are transferred that could have been adequately treated at the original center. For instance, a patient with rib fractures who is transferred to a trauma center but discharged with pain medication rather than being observed for a longer period of time could have had the same intervention at the original hospital. In order to prevent undertriage, which can result in preventable deaths, an overtriage rate of 50 percent is the accepted standard [15]. However, overtriage burdens higher-tier institutions with noncritical patients who could be safely cared for at lower-tier centers, decreasing availability of resources for other patients even at level I trauma centers. Overtriage during [disaster events](#), for instance, increases patient mortality at high-level trauma centers, independently of patient volume [14]. In Mr. F's case, overtriage could have caused the bed shortages at the first two hospitals contacted, contributing to the delay in transferring Mr. F. Had Mr. F been operated on at the local trauma center and died, his case could have been considered undertriaged; in attempting to transfer him to a higher level of care, the local surgeon appropriately triaged the patient but met with difficulty in navigating the transfer system. It must be stressed that Dr. G in this case is not declining to save or care for the patient. Rather, she is actively deciding to participate in a potentially lifesaving transfer to a higher level of care, an important consideration as part of the patient's treatment rather than as separate from it [1].

Nonmaleficence and beneficence. Physicians must also weigh the longer time to intervention that comes with transfer against the enhanced resources available elsewhere. Clinicians, patients, and trauma systems managers must appreciate that transfer is not instantaneous and requires mobilization of significant resources. Although it might be difficult to bring in an on-call operating room team overnight to a rural center, it could potentially take even longer to find an accepting facility, call a transport team, and move the patient to the new center. This dilemma was central to the case of Mr. F. Despite these uncertainties, it is possible to improve estimations of transfer times. Regional trauma databases help clinicians analyze past cases and outcomes to inform future management and to ensure the most prudent resource allocation for critically injured patients [16]. Although this resource could not have helped in Mr. F's case directly, studying his case in combination with other cases on a regional and national level would ultimately impact the design of trauma systems and management of future patients.

The Necessity and Art of Reviewing Decision Making Retrospectively

It is tempting to blame Mr. F's demise on inappropriate delays in operating. A patient in hemorrhagic shock is well served by rapid hemostasis. However, in this case, Dr. G would likely have encountered the same finding as Dr. B: uncontrollable bleeding from behind the liver. The patient has an apparent injury to the retrohepatic vena cava; even with the

increased resources of trauma centers, such injuries are difficult to manage. Half of patients with retrohepatic caval injuries die before reaching the hospital, and even those treated at the best trauma centers have dismal survival rates [17]. In one of the largest series of patients requiring a special maneuver (the Schrock shunt) to control retrohepatic hemorrhage, only 19 percent survived [18]. Undergoing surgery with Dr. G, Mr. F would likely have exsanguinated and perished before any transfer had taken place. Similarly, attempts to lay blame upon the transfer network in which two closer centers could not accept the patient are obviated by the devastating nature of the patient's injury. Trauma systems are designed to prevent death in circumstances in which death could be considered preventable. The death of Mr. F was likely unpreventable and would likely have had the same outcome at either trauma center.

However, if the patient had died from an easily controllable splenic injury, for instance, or from mesenteric bleeding that could have been controlled initially—but was not—with a laparotomy and a single clamp, the retrospective evaluation of the case would result in areas of concern to the eventual surgeon. Transport times would be reviewed, available resources compared to what would have been needed, and the triage practices and operative scope of referring physicians investigated to improve patient care in future cases. Across the country, trauma departments are required, for verification purposes, to perform robust internal retrospective analysis (including registry review and morbidity and mortality conferences) and to review regional databases to improve patient care in real time [1].

Mr. F would probably have died from his injury regardless of where he was treated or time to definitive management; this should be communicated clearly to Mr. F's family. Any errors that Dr. B suspects regarding Dr. G's treatment decisions are necessarily limited by his lack of knowledge of Dr. G's conditions, surroundings, and mindset when making them. Although disclosing medical errors to patients and their families is encouraged by the American Medical Association [19], this practice is limited to errors made by the discloser. Dr. G should not be blamed by Dr. B for Mr. F's death, and Dr. B should be careful not to communicate blame when discussing the patient's death with his family [20]. While it is imperative to review each mortal or morbid case critically in order to continually improve both personal practice and trauma systems, concerns regarding a particular clinician's suspected errors are best expressed to that clinician, who may choose to share them with the patient or the patient's family [19, 20]. Dr. B should discuss Mr. F's case with Dr. G individually in order to identify anything that could have been done better in the case. There is no benefit in second guessing decisions with a patient's distraught loved ones; doing so could ultimately cause increased distress in an already terrible circumstance.

Conclusion

Regionalization is an important component of trauma system management and provides

measurable outcome benefits. However, not all patients benefit from transfer to designated trauma centers, and one conundrum physicians face routinely is making a determination in an individual case of whether the patient will benefit from transfer. The ethical decision making in this context includes considerations of justice in the setting of limited resources. Recognizing that transferring patients is part of their treatment rather than a delay in treatment is imperative to reconciling these concerns.

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ETHICS CASE

Should Trauma Physicians Treat a Severely Injured Patient for the Sake of Elucidating Preferences about Organ Donation?

Commentary by Sandra R. DiBrito, MD, and Macey L. Henderson, JD, PhD

Abstract

Organ donation potential is not a motivator of care in the trauma bay, and it is ethically problematic to consider organ donor potential during the active resuscitation of a trauma patient. Despite organ donation being a public good, the role of the trauma physician is to maintain focus on the patient as an individual and to respect a patient's right to life and autonomy. This tenet of medicine is the foundation of the trust that a community and individuals must have in order for the health care system to function. Fortunately, there are guidelines and systems in place to allow physicians to care for the patient in front of them while simultaneously making morally sound decisions regarding donation in the setting of the current organ shortage.

Case

A 35-year-old man presents to the trauma bay after a motor vehicle collision. Shortly after the wreck, his vehicle burst into flames. He was trapped inside until he could be extricated by emergency medical services personnel. He was unresponsive at the scene, intubated, and brought to a nearby level I trauma center. Initial trauma assessment suggested no evidence of intrathoracic or intra-abdominal injuries. He did, however, have 90 percent total body surface area of mostly third-degree burns, so the burn surgery team was consulted to assess the patient. The burn surgery attending physician felt that the man's burn injuries would be fatal, so he did not recommend further fluid resuscitation (i.e., administration of large volumes of intravenous fluids, necessary for supporting circulation in the context of a large burn and hemodynamic instability).

The trauma and burn teams both agreed to transitioning goals of care for this patient to comfort measures only. No family members were present, nor was it clear whether anyone had been notified regarding this man's injuries or condition. Also unclear was this man's preference concerning whether to donate his organs. He was taken to the intensive care unit, where he died shortly thereafter. For this patient, it is likely that temporary fluid resuscitation would have delayed his death, allowing for time to elucidate his preferences for organ donation and to determine whether he was an appropriate candidate for organ donation.

Commentary

The American Medical Association (AMA) *Code of Medical Ethics'* Opinion 6.2.1, "Guidelines for Organ Transplantation," states that in all professional relationships between a physician and a patient, "the physician's primary concern must be the well-being of the patient" [1]. As a result, organ donation potential is not a motivating factor in the trauma bay. Such a motivation would also be ethically problematic during the active resuscitation of a trauma patient. While organ donation is a [public good](#), a trauma physician motivated by the potential for organ donation places herself in conflict with her duties to the patient, specifically, the obligation of respect for persons. This principle of medical ethics is the foundation for the proper functioning of the physician's role as a fiduciary and, by extension, of the health care system as a whole. This principle, bolstered by federal guidelines and other systems in place, provides physicians the ability to care for patients without subjecting them to moral hazard regarding organ donation in the setting of the current organ shortage.

Hospital Procedures for Communicating about Organ Donation

In this case, clinical and professional ethics require that the health care team treat the trauma patient with all life-saving means until declared [brain dead](#), or until the patient becomes at risk of imminent death in a situation of anticipated cardiac demise [2]. It is not until brain death, cardiac death, or imminent death that organ donation is discussed or considered in the trauma setting. Honoring the "dead-donor rule" is paramount in maintaining public trust in the national organ donation and health care systems [3, 4]. In all instances, it is critical that members of the health care team avoid perceived or actual conflicts between caring for the patient and facilitating organ donation; therefore, health care professionals providing care at the end of life should be distinct from those participating on the transplant team. No member of the transplant team may have any role in the decision to withdraw life support or in the process leading to pronouncement of death. Federal regulations stipulate, "*No physician or nurse or any other caregiver in the hospital is allowed to make decisions about patient medical suitability for any type of organ, tissue or eye donation*" [5; italics in the original]. Rather, communication about organ donor potential and authorization conversations are the responsibility of one of 58 federally designated organ procurement organizations (OPOs) [6, 7]. Although there is evidence that some trauma surgeons would embrace having a role in organ donation requests—either alone or with an OPO representative—and believe that they could influence a family's decision, they are not part of the current organ procurement process in the United States [8]. Indeed, there are federal regulations in place to guard against the physician requesting authorization for organ donation from next of kin [5].

At the time of imminent death, hospitals are instructed to alert the appropriate OPO, which will begin to facilitate the communication about organ donation. Only an OPO staff member or a trained, designated requester (a person who has completed a course on approaching potential donor families and requesting organ donation that is offered or

approved by the OPO and designed in conjunction with the tissue and eye bank community) may approach the family of a potential donor for consent for organ, tissue, or eye donation [5]. This requirement is intended to ensure an informed and uncoerced decision; it recognizes that training and skill are required to guide a family through the decision-making process and effectively removes the influence of the treating care team. In this way, distance is maintained between the physicians providing potentially life-saving trauma care and the OPO staff discussing organ donation decisions with the families who could provide authorization for organ donation after death.

With the enactment of [first-person authorization](#) or donor designation legislation came changes in the way in which OPOs approach families of patients whose legally expressed decision was to become an organ donor upon their death. Unlike before, when the OPO had to request family permission for donation regardless of the patient's legally expressed decision to donate, OPOs must now inform families of the patient's decision to donate, although familial authorization is still sought [9]. Families are also notified because donation impacts end-of-life planning, such as funeral arrangements. All 50 states, the District of Columbia, and the US Virgin Islands have enacted this legislation, according to Donate Life America [10]. It has also been shown that first-person authorization legislation increases the likelihood of familial authorization and satisfaction with the final donation outcome [9].

Federal regulations also dictate the process of organ procurement in donor hospitals [5]. OPOs are required to screen all hospital deaths for potential organ and tissue donation. However, in the trauma setting, a very timely evaluation is important to increase the likelihood of meaningful recovery of organs such as kidneys, liver, lungs, and heart with acceptable ischemia time. It is important to note that individual OPOs and hospitals have specified clinical triggers that should prompt physicians to contact the OPO regarding patients that are nearing death. Physicians are encouraged to contact the OPO within one hour of imminent death [5], so it is not imperative that physicians wait until the patient has been declared dead before initiating the donation process. The goal is to allow time for the discussion to take place between the patient's family and the OPO staff and to decrease potential organ ischemia time.

Organ donation after cardiac death (DCD) is not optimal but remains a valuable source of organ donation in the acute trauma setting. In DCD cases, more ethical, clinical, and logistical challenges emerge for OPOs and physicians [2]. Two primary ethical issues concern conflicts of interests and the timing of organ recovery. As the dead-donor rule must be maintained (and donors in cases of DCD should only be declared dead after the permanent cessation of circulatory function), permanence is generally established by a two-to-five-minute waiting period. Because the preparation for organ recovery in DCD cases begins before the declaration of death, there are potential conflicts between the donor's and recipient's interests.

Timing is critical. Unfortunately, as soon as the patient expires from cardiac death, as would be anticipated in this case scenario, the organs are not perfused and begin to suffer from ischemia. Longer ischemia time is associated with worse outcomes for potential organ recipients, and thus timely organ recovery is imperative in DCD circumstances [11]. Therefore, the hospital and its physicians need to act quickly to contact the OPO, attempt to reach the patient's next of kin to inform them of the imminent death of the trauma patient and, at the same time, care for the patient to the best of their ability. Studies have demonstrated that referral from the emergency department (ED)—and for trauma patients specifically—is associated with greater likelihood of successful organ retrieval than referral from inpatient settings, possibly because ED referral leads to earlier identification of potential donors and earlier OPO involvement [12]. Physicians tend to assume that families would be averse to making this decision so shortly after an ED death, but this assumption was not borne out in recent studies of family member preference [13, 14]. Families who discussed more topics and had more conversations related to organ donation and who spent more time with OPO staff were more likely to donate [14].

Analysis of Ethical Issues in this Case

Nonmaleficence. It is the primary responsibility of the trauma team to provide optimal care for the patient. Prolonging the patient's life by extending futile care maneuvers could harm the patient, exposing that patient to unnecessary pain and suffering and thus violating the principle of nonmaleficence [15]. The concern about providing futile care should be a priority of the trauma surgery team, and the patient's death, if inevitable, should be supported in the most comfortable and respectful manner possible [16]. Such support would likely not involve use of an invasive technique (e.g., getting access for IV fluids), transferring the patient to an intensive care unit, and waiting an undetermined amount of time while physicians searched for organ donation wishes, family members, or other information required for donation, all while the patient could be suffering from a mortal injury. As Wall et al. remind us, "Protocols must instill faith that all life-sustaining measures were exhausted before death and that once futility is determined according to evidence-based guidelines, organ preservation may ensue in an ethical manner while maximizing the potential for graft survival" [17]. After making the patient comfortable, donor hospitals that inform the OPO of a potential donor in a timely fashion should potentially allow for OPO evaluation even before cardiac death occurs.

Respect for patient and family. The physician team should be allowed to contact the patients' family or next of kin if possible to deliver news of imminent death. In this case, it is particularly relevant that the patient is unrepresented by a family member. A delay in identifying decision makers who can authorize donation can increase the amount of time it takes an OPO to begin these conversations. If a family member were readily available, the care team could contact the OPO and a discussion could take place promptly and

efficiently, potentially resulting in a higher likelihood of organ recovery. However, delivering information to a family about a patient's imminent death is a sensitive issue, and it is not appropriate to inquire about organ donation in the same breath as [delivering tragic news](#) to a family. Professional ethics and respect for the patient and family require that family members are given time—even a few moments—to process the news before they are approached about organ donation.

Balancing Public and Individual Needs in Organ Donation

It is the professional duty of the trauma physician to make ethical decisions regarding their patients, other vulnerable populations, and the public [18]. More than 125 000 people are on the national waitlist for organs; one organ donor can save eight lives and can also save or improve the lives of up to 50 people through the donation of tissue and eyes [19, 20]. Naturally, as organ donation can be viewed as a public good, the trauma team should contact the OPO in a timely fashion in this case. Timely notification requires the trauma team to recognize imminent death, make a definitive decision, and appoint a team member to contact the OPO. Without directing this responsibility to a team member, it will fall by the wayside in an acute resuscitation effort and increase the delay in potential organ donation. Any delay could compromise the ability to recover potential organs and would put the vulnerable population of patients on the organ donation waitlist at further risk of death.

Physicians have been significant contributors to public health outreach regarding deceased donor education. A recent study of the United Network for Organ Sharing database found that DCD increased from 3.1 percent to 14.6 percent of total eligible posttrauma donors between 2002 and 2013 [21]. Further studies demonstrate that educating emergency and trauma physicians on organ donation procedures dramatically increases the number of patients referred for donation and the number of organs ultimately recovered [22, 23]. Donation education interventions at the physician level help to keep the care team distinct from the organ donation team, to ensure tasks are appropriately delegated, and to mitigate ethical tensions among personnel when care of potential donors is required [24].

Final Considerations

Medical ethics requires that trauma physicians treat patients using all life-saving measures available before determining that death is unavoidable and considering potential organ donation. Although we might consider additional measures to prolong life for organ donation unethical, as they could interfere with the patient's dying process or leave the patient's loved ones uncertain about how and when death actually occurs, overall, American society tends to value the life and autonomy of each individual, and as such our care of patients in a traumatic situation must focus on the individual. As a public good, organ donation can be life saving for countless people on waitlists across the

country. Clear procedures in seeking organ donation can help mitigate these ethical tensions.

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ETHICS CASE

Should Family Be Permitted in a Trauma Bay?

Commentary by Matthew Traylor

Editor's Note: Matthew Traylor is the winner of the 2017 AMA Journal of Ethics John Conley Ethics Essay Contest.

Abstract

This essay explores how some of the arguments advanced for and against family presence during cardiopulmonary resuscitation might apply to the question of whether family should be permitted in the trauma bay. While the first section suggests that many of the proposed benefits might apply to family presence during trauma resuscitations, the second section contends that family presence in the trauma bay could detract from the quality of patient care, violate patient privacy, and be psychologically damaging for the witnessing family. The essay concludes by proposing a chaperoning system that could mitigate some of the proposed concerns with a family presence policy and by analyzing some of the ethical commitments that underlie the discussion of family in the trauma bay.

Case

A 28-year-old man is involved in a motor vehicle collision on a country road in rural North Carolina. He was driving a large SUV and restrained by a seatbelt. According to witnesses, the driver appeared to lose control of the vehicle while driving over an icy overpass. At initial assessment by emergency medical service (EMS) professionals, the patient was obtunded and hypotensive, for which he was emergently intubated; his passenger was pronounced dead at the scene. Shortly after intubation, the patient suffered a cardiac arrest. EMS performed eight minutes of cardiopulmonary resuscitation before his spontaneous return of circulation. The patient was brought via helicopter to a level I trauma center.

In the trauma bay, the team performs a [primary survey](#) (a specific, targeted exam done in the trauma bay to identify life-threatening injuries) during which the patient requires bilateral thoracotomy tube insertion and central line placement. After placement of the left chest tube, a liter of blood immediately drains into the device's collection chamber. After further examination, the team finds evidence of severe chest trauma: wide chest wall ecchymosis (severe bruising), subcutaneous crepitus (air under the skin suggesting

traumatic injury to the lung), and extensive bilateral rib fractures. Extended focused assessment of sonography in trauma (FAST) exam (a quick abdominal ultrasound to identify intra-abdominal hemorrhage after traumatic injury) reveals no intra-abdominal fluid collections; however, the patient has what appears to be blood in the pericardial sac and a large undrained hemothorax (collection of blood) in the left chest. A massive transfusion protocol is initiated to try to compensate for his blood loss. Nevertheless, he remains hypotensive and tachycardic. The trauma team plans for exploratory thoracotomy to identify and treat a suspected intrathoracic injury. As the trauma team begins coordinating with members of the operating room staff, the on-call chaplain approaches the senior attending physician with a request. The patient's wife, who has just arrived at the hospital, has asked for permission to come to the trauma bay to see her husband prior to surgery.

The attending physician looks at her patient and at members of the trauma team engaged in a flurry of movement as they prepare the patient for immediate transport to the operating room. With tubes protruding from the patient at nearly every orifice and a pool of blood expanding beneath his stretcher, the attending physician observes a scene that could be traumatizing to even a seasoned clinician and wonders how to respond to the chaplain.

Commentary

Our case of this 28-year-old man resembles two pioneering cases described by Hanson and Strawser in 1982 at Foote Hospital in Jackson, Michigan [1]. In one, a family member refused to leave the patient after riding in the ambulance during an ongoing resuscitation. In the other, the wife of a wounded police officer begged to be allowed to enter the resuscitation room to be with her husband, even if only for a few minutes. Following these events, Foote Hospital questioned the policy of routine exclusion of family from resuscitation procedures and began allowing relatives to be present during resuscitation attempts. Since then, a substantial body of literature has developed exploring family presence during resuscitation (FPDR), much of it primarily focused on cardiopulmonary resuscitation (CPR). FPDR parallels medicine's growing emphasis on respect for autonomy and family-centered care [2, 3], and evidence to be discussed here suggests it has [numerous benefits](#) and that separating patients and families during CPR might be a paternalistic practice that could be doing more harm than good.

However, this essay argues that many of the ethical, aesthetic, and practical features of the trauma resuscitation in this case, and of the trauma setting in general, amplify several of the proposed concerns with FPDR and that hasty extrapolation from evidence supporting FPDR to a similar family presence policy in the trauma bay could do harm to both patient and family. A cautious adoption of family presence in the trauma bay is urged, and the essay concludes by offering suggestions for appropriate chaperones for

family in the trauma bay as well as education on, and expectation management for, the events therein.

The Benefits of Family Presence

Evidence suggests that FPDR is exceedingly popular among patients and families [4-8]. From the patient's perspective, the knowledge that family can be present provides comfort and promotes a sense of well-being [9, 10]. Family can also advocate for the patient and help "humanize" the patient for the health care team [11]. It has also been suggested that the Hawthorne effect, which happens when subjects change their behavior due to becoming aware of being observed [12], might apply to FPDR, with clinicians being more attentive when under scrutiny from family members [13]. Another benefit of relatives' presence seems to be lower levels of psychological distress for the witnessing relatives. A randomized controlled trial found that relatives who had the opportunity to witness CPR had significantly lower rates of symptoms of posttraumatic stress disorder (PTSD) than those who did not, while relatives who did not witness CPR experienced more depression and anxiety than those who did [14]. Those relatives who were offered the opportunity to be present during CPR had less intrusive imagery, posttrauma avoidance behavior, and symptoms of grief when assessed three months [14] and one year [15] later. Witnessing resuscitation can inform the family about the severity of their loved one's condition and can provide reassurance that all measures were taken to save the patient's life [5, 9]. In the event that the resuscitation is not successful, being present can facilitate the grieving process for the family by allowing the opportunity for a last goodbye, aiding in closure and bringing a sense of reality to the loss so as to avoid a prolonged period of denial [1, 16, 17].

These benefits could potentially carry over to the trauma setting. In our case, if the patient's wife is admitted to the trauma bay, she would certainly witness the full gravity of her husband's condition and the methods employed to save his life rather than be left in the waiting room to agonize over the unknown. Should the worst eventually happen, that brief time with her husband in the trauma bay might facilitate psychological acceptance of the loss and, by blunting its suddenness, potentially reduce her own future psychiatric morbidity [18, 19]. Her presence with her husband could also facilitate transparency and communication with the medical staff, thereby enhancing the family-staff relationship [16]. And, perhaps most fundamentally, allowing the patient's wife to be with her husband in what could be his last moments respects her wishes as an autonomous decision maker and tacitly endorses the notion that dying is more than just a clinical process and death a failure of sufficient medical intervention.

Arguments against Family Presence in the Trauma Bay

Although many professional organizations now advocate for FPDR, including the American Heart Association [20], the American Association of Critical-Care Nurses [21], the Emergency Nurses Association [22], and the Resuscitation Council (UK) [23], family

presence is not universally endorsed, particularly in the trauma setting. In a survey of members of the American Association for the Surgery of Trauma (AAST), 97.8 percent reported believing that family presence during all phases of trauma resuscitation is inappropriate. Of those AAST members who reported experience with family presence, 74.8 percent characterized the experience as negative [24]. The disconnect between the relative promotion of FPDR in major professional guidelines [25–28] and its lack of acceptance in the trauma setting suggests that family presence during CPR and family presence in the trauma setting might not be entirely analogous.

Several arguments have been advanced against family presence that are especially forceful when applied to the environment of the trauma bay. First, the presence of family might impair the delivery of care in the trauma bay. In the AAST survey, the majority of AAST members strongly agreed that family presence during trauma resuscitation would interfere with patient care [24]. Although several studies of FPDR in general have reported that family members tend not to directly disrupt resuscitation efforts [1, 5, 14], in the trauma setting, family presence can indirectly impact the quality of care provided. The increased crowding and commotion caused by distraught family could provide unnecessary distraction to the trauma team, especially during moments of critical task performance. In our case, the presence of the man's wife could pose an increased risk of harm to the man himself, whether through her direct interference with the resuscitation itself or through an indirect effect on overall resuscitation quality. Respondents in the survey of AAST members reported believing that family presence would increase the stress level of the trauma team, possibly leading to more errors [24]. Helmer et al. compared the resuscitation of a critically injured trauma patient to the operation of an aircraft in that both require fast assimilation of data and quick decision making. They discuss the Federal Aviation Administration's "sterile cockpit rules" that prohibit unauthorized persons on the flight deck as well as crew member participation in nonessential activities during critical moments of aircraft operation and suggest that keeping potential distractions to a minimum in the trauma setting would be advisable as well [24].

Second, allowing relatives to be present in the trauma bay could in fact violate the patient's wishes regarding privacy. In one survey of patients' and family members' opinions on FPDR, 22.2 percent of respondents wanted no family presence and 43.7 percent only wanted certain, predefined family to be present [29]. Patients undergoing trauma resuscitation are often significantly incapacitated and rarely in a position to give consent for family presence or to articulate which family members they would want permitted to be present. Automatically admitting family might contravene the patient's incommunicable desire for privacy.

Finally, events in the trauma bay could be excessively disturbing or even traumatic for relatives, such as the wife in our case. Families of critically ill patients frequently develop

anxiety, depression, and symptoms of PTSD during and after hospitalization [30–33]. Although, as previously discussed, some relatives might benefit from witnessing CPR in a controlled hospital setting, PTSD symptom scores were significantly higher among witnesses of out-of-hospital resuscitations where the atmosphere is less controlled than among nonwitnesses [34]. One can imagine that, to the medically naïve observer, a trauma resuscitation more closely resembles the chaos of an out-of-hospital rescue than a well-run code on the hospital floor. Although television shows—beginning with *St. Elsewhere* and *ER* and progressing to the “hyperrealistic” shows currently airing—and the internet have provided the public with glimpses of what occurs in the trauma bay, these accounts are often highly scripted and edited. The sights, sounds, smells, and full sensorium of a trauma resuscitation are frequently psychologically overwhelming, even to medical professionals [35]. Several brief but poignant accounts have been written by relatives of trauma victims describing the horror of witnessing medicine’s final assault on their loved ones [36].

Guidance in the Trauma Bay

Some of the concerns about family presence during trauma resuscitation could be mediated by a chaperone who acts as a liaison between the family and trauma team. Before entering the bay with family members, the chaperone can assess their willingness to observe, their perceptions about the trauma bay, their customary coping strategies, their cultural beliefs, and other factors that might affect their experience. He can also identify family members who are overly aggressive or intoxicated or who might otherwise cause significant disruption. Moreover, he can prepare the family beforehand by providing information on the expected procedures and interventions likely to take place and guide the family through the resuscitation while it occurs, answering questions and providing support. However, while a chaperone might be able to intuit certain relationship dynamics between a patient and potential family witnesses by speaking with the family in advance, patient privacy ultimately remains a concern as it is often impossible to definitively determine if an incapacitated patient would approve of family presence.

Similar to our case, in one of the few hospitals currently with a family presence policy for trauma [37], the chaplain acts as the chaperone. Provided that the chaplain has enough medical knowledge to interpret the events of the trauma resuscitation in a way the family can understand, this is an ideal choice. [Hospital chaplains](#) are trained to communicate effectively with distraught or grieving families across a variety of cultures and faiths. If an appropriate faith leader cannot be found, or if the family is uncomfortable with a chaplain, another member of the medical team who can communicate compassionately with the family can fill the role.

Utilitarian Autonomy versus Deontological Constraints

Even if the strongest versions of the arguments against family presence are accepted, would we still be justified in barring family members from the trauma bay? The underlying ethical question reduces to a discussion of the conflict between the utilitarian implications of promoting respect for family autonomy and a deontological restriction of family presence because individual patients or family members might be harmed, even if the outcome tips toward the good on a more consequentialist evaluation. Are we prepared to accept that the benefits of allowing family presence in the trauma bay will do more good for a greater number of trauma patients and their families in the aggregate even though in some cases the quality of care might be compromised, the patient's privacy might be violated, and the family might suffer psychological distress? Or do we insist that allowing a policy of family presence that could do some harm, even if only in a small minority of cases, is indefensible as it sacrifices some number of individuals as ends-in-themselves to a notion of an expected greater good? Ultimately, as medicine expands even beyond the notion of a classic liberal individualism [38] that protects specific basic liberties and interests of patients as individuals to encompass an emphasis on the rights of families in the care process [2], family presence during trauma resuscitation will likely become more commonplace. If a utilitarian ethos is to predominate, we would do well to ensure that attempts at beneficence do not run roughshod over the obligation to do no harm by establishing effective chaperoning systems that can support witnessing families through what could be one of the most traumatic experiences of their lives.

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THE CODE SAYS

The AMA *Code of Medical Ethics'* Opinions Related to Urgent Decision Making

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Abstract

The American Medical Association (AMA) *Code of Medical Ethics'* opinions underscore a physician's responsibility to act in an emergency when patients cannot give informed consent and a surrogate or advance directive is unavailable. The duty to provide urgent care extends even to patients with whom the physician has a familial, social, or professional relationship and in cases in which physicians themselves might be subject to harm.

Informed consent and decision making are principles fundamental to both ethics and law. Generally, patients must receive and understand all relevant information regarding medical treatment before making a decision to consent to a particular intervention. If they are unable to make decisions for themselves (if they are unconscious, for example), then the treating physician generally refers to an advance directive or [surrogate decision maker](#) for consent or input on whether and how to proceed.

In emergencies, however, a patient might present without any written directives or family members who can consent to or provide insight about how to proceed with medical care. The *Code of Medical Ethics* addresses these types of situations in Opinion 2.1.1, "Informed Consent."

In emergencies, when a decision must be made urgently, the patient is not able to participate in decision making, and the patient's surrogate is not available, physicians may initiate treatment without prior informed consent. In such situations, the physician should inform the patient/surrogate at the earliest opportunity and obtain consent for ongoing treatment [1].

The concept of physicians acting during an emergency is discussed in several places in the *Code*. Opinion 5.2, "Advance Directives," states:

In emergency situations when a patient is not able to participate in treatment decisions and there is no surrogate or advance directive available to guide decisions, physicians should provide medically

appropriate interventions when urgently needed to meet the patient's immediate clinical needs. Interventions may be withdrawn at a later time in keeping with the patient's preferences when they become known and in accordance with ethics guidance for withdrawing treatment [2].

A common element found in these opinions is that a physician should act immediately when necessary and always disclose what has transpired as soon as appropriate. In fact, physicians are almost always compelled to act during an emergency. For example, Opinion 8.3, "Physicians' Responsibilities in Disaster Response and Preparedness," specifies that an obligation to respond during [disasters](#) "holds even in the face of greater than usual risks to physicians' own safety, health, or life" [3], and Opinion 1.1.7, "Physician Exercise of Conscience," states that "physicians are expected to provide care in emergencies" [4]. Opinions 1.2.1, "Treating Self or Family" [5], and 10.3, "Peers as Patients" [6], both clarify that physicians "should not hesitate" to treat in emergencies, in isolated settings, or when there is no other qualified physician available. The care should always be documented, and the patient transferred to another physician as soon as one becomes available. These opinions further underscore the physician's responsibility to act in an emergency.

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STATE OF THE ART AND SCIENCE

Defining “Community” and “Consultation” for Emergency Research that Requires an Exception from Informed Consent

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Abstract

Trauma care requires rapid interventions to optimize the chances for survival. Many patients are either in shock or unconscious and are, therefore, unable to provide informed consent even for standard procedures. Research-related interventions must similarly be initiated rapidly with no opportunity to obtain consent from the patient or the patient’s legally authorized representative. Federal regulations allow for an exception from informed consent in these circumstances once the investigators complete a process of community consultation and public disclosure. The challenges for investigators include how to define the at-risk community for enrollment in the trial and then how to adequately reach out to that community. Many approaches have been used, with varying success. What constitutes true engagement with the community needs to be further explored.

Exception from Informed Consent for Emergency Research

The management of severely injured patients is time sensitive, focusing on the “golden hour” to maximize likelihood of preventing death. Novel interventions need to be initiated rapidly. Conducting clinical trials during this brief window of opportunity presents significant ethical challenges.

In 1991, the US Department of Health and Human Services developed the [Common Rule](#), designed to protect human subjects from harm and to promote uniformity and compliance across all federal agencies [1]. Informed consent of the individual subject or legally authorized representative (LAR) is standard for most clinical trials [1]. In emergency situations, the decision to initiate many interventions must be made within minutes, but patients are often in shock or unconscious and therefore unable to give consent, even for standard procedures. The LAR is often not available or in a state of emotional distress [2]. Standard practice for emergency treatment is to proceed without consent. But what about research?

Community Consultation and Public Disclosure

Prior to 1991, without guidance from federal agencies, researchers studying novel therapies in emergency situations (e.g., cardiac arrest or major trauma) developed the concept of “deferred consent.” They enrolled subjects and later approached a LAR for consent [3]. After the Common Rule was adopted, however, all resuscitation research was halted unless prospective consent could be obtained. In 1996, the Final Rule allowed research to be performed without informed consent in emergency circumstances [4]. To proceed, investigators need to demonstrate that: (1) the subject has an acutely life-threatening condition, (2) currently available treatments are untested or unsatisfactory, (3) the potential subject cannot consent because of the acute condition, (4) there must not be time within the proposed therapeutic window to contact the LAR to obtain prospective consent, and (5) the subject might directly benefit from participation.

The federal regulations also mandate [community consultation](#) and public disclosure, overseen by a local institutional review board (IRB), as protective measures before researchers are permitted to enroll subjects [5]. Community consultation is a two-way process often conducted through a variety of mechanisms to gather information regarding community members’ attitudes and beliefs related to the appropriateness and acceptability of the design, risks, and benefits of the planned research. The investigators reach out to community members who attend town hall or civic group meetings or who respond to surveys distributed by the researchers. Feedback from community consultation is reported to the local IRB, an independent Data Safety and Monitoring Board (DSMB), the Food and Drug Administration (FDA), and funding agencies for review. There is no standard for how much community support for a study is needed, but study protocols and the community consultation process itself may be revised based upon the feedback. Nonetheless, community consultation does not constitute community consent. By contrast, public disclosure is a one-way process whereby the investigators inform the community about the study.

The goal of public disclosure *prior to initiation of the study* is to provide sufficient information to allow a reasonable assumption that the broader community is aware of the plans for the investigation, its risks and expected benefits ... and the fact that the study will be conducted without obtaining informed consent from most study subjects [6].

The IRB determines the adequacy of the researchers’ community consultation and public disclosure plans and has the prerogative to ask for revisions.

Subjects are enrolled without prospective informed consent into clinical trials with severely injured patients based upon the inclusion and exclusion criteria for the study. Once a subject is enrolled in the study, either the subject or the LAR must be informed of the research and approached for consent for further participation with an opportunity to

withdraw [5]. If the subject or LAR decides to withdraw, the subject remains enrolled and data collected up to the time of withdrawal is retained [5]. Any public information about the subject, such as vital statistics, can also be used by the researchers [5].

Ethicists proposed that community consultation would help mitigate the risks and enhance the benefits of research and contribute to its legitimacy via community members' shared responsibility with investigators [7]. Implementation of the regulations regarding community consultation and public disclosure, however, remains open to interpretation by researchers and IRBs, leading to significant variability.

Experiences with the Community Consultation and Public Disclosure Process

In 2008, the Resuscitation Outcomes Consortium (ROC), which was developed to study early interventions for cardiac arrest and trauma, reported on regulatory challenges, including community consultation and public disclosure [8]. (The author of the present paper was a co-investigator for ROC and the chair of its regulatory committee.) Approaches to community consultation varied significantly among sites. Many sites sponsored town hall events with members of the community and IRB representatives, but these events tended to be poorly attended and yielded little useful feedback regarding the attendees' attitudes towards the study and little information about attendees. Investigators were better able to engage with community members and leaders when they presented the study to a group that was already meeting for a different purpose, such as government groups or community organizations (e.g., Rotary clubs or church groups). Focus groups, composed of persons who had survived conditions similar to those in the proposed study, were very engaged and provided excellent feedback. Several ROC sites reached out directly to members of the community in the geographic catchment area using a random-digit-dialing, structured telephone survey conducted by an independent professional group [9]. Telephone surveys have several potential advantages over other approaches including large numbers of respondents, better representation of the community, known demographics, impartiality, and speed [9]. The downsides are the expense, fewer people using landlines (making the geographic location based on phone number impossible to determine), and the lack of dialogue between the community and the investigators [9]. The techniques used for public disclosure by ROC sites typically include press releases with newspaper, radio, and television interviews; creation of websites with information about the study and opportunities to complete surveys; and paid advertisements [8]. One ROC site has more recently used social media to supplement the process [10].

Nevertheless, current approaches to community consultation and public disclosure might reach only a small segment of the population. Surveys of convenience samples of potentially eligible subjects in three separate studies demonstrated that only 5-10 percent of members of the public were aware of the study [11-13]. Given this low level of public awareness, it's probable that very few subjects enrolled in emergency research

studies are aware of the study beforehand, although there is no data to support this hypothesis.

High-Risk Emergency Research Studies

For patients who suffer a cardiac arrest from traumatic hemorrhage, the chances for survival are 5-10 percent [14, 15]. Surgeons can't operate fast enough to stop the bleeding before irreparable vital organ damage occurs. Emergency preservation and resuscitation (EPR), which uses rapid cooling of the patient to decrease oxygen requirements of vital organs, has been developed to buy time for surgical hemostasis. This experimental procedure involves infusing a large amount of cold saline directly into the aorta to cool the body to 10-15 degrees Celsius [16]. After bleeding is controlled, delayed resuscitation requires cardiopulmonary bypass because of the body's cold temperature.

The EPR for Cardiac Arrest from Trauma (EPR-CAT) study is a safety and feasibility study led by the author that is currently enrolling subjects at the Shock Trauma Center in Baltimore, Maryland [16]. UPMC Presbyterian in Pittsburgh, Pennsylvania, was involved in 2014 but is currently on hold. Given that operative management of victims of penetrating trauma (e.g., a gunshot or stab wound) can be more straightforward and that victims don't often have head injuries, which would confound functional outcome determinations, the study is limited to patients with penetrating trauma.

Challenges for community consultation and public disclosure faced by the EPR-CAT trial include explaining a complex, high-risk procedure quickly in lay terms at community events and reaching out to the at-risk population for penetrating trauma. Unlike blunt trauma, which can readily affect people of any gender, age, or socioeconomic status, penetrating trauma predominantly affects young black males, a population that is difficult to reach via standard community events or media.

The approach to community consultation differed in the two cities. Community consultation in Pittsburgh initially included town hall events and meetings with the Pittsburgh Commission on Human Relations and the University of Pittsburgh Center for Minority Health Community Research Advisory Board [16]. These groups recognized the potential benefit of the study but raised concerns about how to reach the community at risk [16]. Consequently, the process was revised to include a random-digit-dialing survey in the at-risk community based upon trauma registry data [16]. Surveys were also placed in the trauma clinic, where patients represent the population at risk. The surveys were developed to explain the study in lay terminology, and the verbiage was approved by the IRB. The majority of respondents (approximately 70 percent) reported being willing to participate themselves or to have a family member participate in the study [16]. The community consultation process in Baltimore focused on reaching out in person to the communities at risk [16]. The principal investigator (the author) and a

research coordinator attended events in East and West Baltimore, where community members could discuss the study and then complete a survey [16]. Surveys were also available in the trauma clinic and online. The responses to conducting this study were overwhelmingly positive [16].

Public disclosure in both Pittsburgh and Baltimore involved press releases with local and national media attention. Both sites developed websites [17, 18]. Advertisements were run in the *New Pittsburgh Courier* and the *Baltimore City Paper*, which focus on the African-American community. The feedback from both communities was positive and was acceptable to the local IRBs, the DSMB, the FDA, and the US Army Human Research Protections Office.

How Should We Define and Engage with the Community?

As explained above, for emergency research, federal regulations require consultation with “representatives of the communities in which the clinical investigation will be conducted and from which the subjects will be drawn” [19]. How the at-risk community is defined is dependent upon the institution conducting the research, the particular disease entity being studied, the availability of an appropriate specialized center (e.g., a trauma center), and modes of transportation. For example, in ROC studies that involved paramedics administering a fluid to trauma patients, the community included the population served by participating emergency medical services. Because EPR needs to be initiated by specialists at the trauma center shortly after injury, however, the at-risk community was limited to the local area near the trauma center.

Patients may define community differently than researchers. In one study, almost all patients in an urban emergency department identified with a community based upon geography or religion, not race or ethnicity [20]. They welcomed consultation with their communities and felt that community leaders would be appropriate consultants to provide robust feedback to researchers, who should therefore consider revising community consultation approaches based upon a differently defined community.

When reaching out to a community, researchers need to consider community members’ potential mistrust of the medical system. In general, subjects in trauma studies, such as ROC, meet the typical demographics found in trauma registries [21]. In contrast, a study of penetrating trauma victims, like the EPR-CAT trial, is complicated by race, socioeconomic status, and gender. Blacks’ skepticism toward [medical experimentation](#) is the result of a long history of medical exploitation and mistreatment [22]. Conversely, variables that might contribute to trust of medical experimentation include a perception of the need for help and prior knowledge of the procedure, conditions which can be met by diligent researchers. One could hypothesize that the community in Baltimore is supportive of the EPR-CAT study because it recognizes both the need to save trauma

victims and that the Shock Trauma Center is there to help, and the investigator personally engaged with community members.

Future Directions

Community consultation remains an ill-defined concept for both investigators and IRBs. For the process to achieve its goal of meaningful dialogue between the researchers and the community, both need to agree on what constitutes the community (i.e., the at-risk population). The experience of the EPR-CAT study demonstrates how community consultation helped refine the definition of community and make the community consultation process more meaningful.

No single strategy works across all studies and communities. Incorporating a variety of activities can broaden community involvement and maximize the interactions between the investigators and the community. As community consultation continues to evolve, more ongoing, in-depth engagement with members of the community would be extremely helpful for identifying and examining points of concern related to acceptability of medical research in general and resuscitation research in particular.

Future research should try to demonstrate that improving community consultation and public disclosure strategies leads to a better understanding of the research project—its goals, risks, and benefits—and to a true partnership between the investigators and the community. Ultimately, research subjects and patients will reap the benefits.

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MEDICINE AND SOCIETY

Gun Violence Research and the Profession of Trauma Surgery

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Abstract

The effects of violence are clearly a central component of any trauma surgeon's job. The role trauma surgeons should play in its prevention and advocacy, however, is not clearly defined. In this article, we discuss the statistics and lack of research on gun violence and survey some of the moral frameworks that define a trauma surgeon's professional responsibilities in violence prevention at a practice and a policy level.

The Context: Some Basic Facts on Gun Violence and Gun Violence Research in the US

Gun violence is responsible for approximately 35 000 deaths per year in the US—roughly equivalent to 96 gun-related deaths per day [1]. Mass shootings account for less than 1 percent of all gun-related deaths in the US [2]. Most gun-related deaths in the US are from suicide or homicide (65 percent and 35 percent, respectively) [3, 4], with 70 percent of homicides being gun-related [5] and states with more guns having more homicides [6]. A person's odds of dying from gun injuries increase at least twofold just by living in a house with a gun [7-9]. A systematic review and meta-analysis found that access to a gun increases the odds of suicide threefold [8].

Gun violence in the US far exceeds that of any other developed nation [10]. Homicides by gun violence in the US number approximately 29.7 per 1 million annually; the next closest developed nation is Switzerland, with 7.7 per 1 million annually [11]. In addition to gun-related deaths, an estimated 81 114 Americans were injured, but not killed, by guns annually between 2011 and 2015 [1]. There are now more guns in the US than there are people [12].

Simply having this information has important implications, and perhaps moral relevance, for trauma surgeons who practice in an environment where gun violence is a key pathology and a primary clinical concern. A [public health approach to gun violence](#) has provided some insight into ways to prevent injury and death from firearms. Studies have provided epidemiological data on gun violence, including the prevalence of gun ownership and its correlation with gun violence—specifically, homicide victimization and suicide—that have important implications for public health interventions and policies that could effectively decrease the burden of gun violence [6-9, 13-16]. But, as we discuss below, this approach has been limited by underfunding. All this poses an ethical

dilemma for the trauma surgeon whose duty is in part tied to advocating for fair and just allocation of resources—including the benefits of research—to an entire population of people affected by gun violence.

Gun Violence Research

Advancing research on gun-related injury prevention is severely constrained by current governmental policies. Due to restrictions, research for gun violence is severely underfunded [3, 17, 18]. This deficit is most clearly seen when funding for gun-related research is compared to funding for diseases with similar burdens on public health. Sepsis, for example, kills about the same number of people as guns do per year [18, 19]. Over the past ten years, however, the federal government has provided \$3 billion of research funding for sepsis, while gun-related research has received less than 1 percent of that for sepsis [18].

The constraints on federal funding for gun-related research are largely attributable to a rider placed in a 1996 federal spending bill commonly referred to as the “Dickey Amendment,” which eliminated any federal funds from being used for injury prevention research that could “be used to advocate or promote gun control” [20]. While the Dickey Amendment does not make gun violence research illegal, the provision has proved to be extraordinarily successful in preventing advances in gun violence prevention research. Since the bill’s passage, any gun-related research that has been conducted essentially excluded federal research funding, which has greatly reduced the number of potential contributions to the scientific literature on this very real public health problem [21]. Without more rigorous research, which would require substantial funding, our understanding of gun violence is limited to correlations and educated guesses. It’s clear that much more research is needed before we will be able to establish a mature understanding of gun violence and to develop consequential public health interventions.

Population-Based Bioethics and Justice

How resources are allocated to public health interventions—and gun violence prevention in particular—poses a problem of justice from a population-based perspective [22] and for understanding the trauma surgeon’s role. Currently, the distribution of public health research funding does not reflect the effect that gun violence has on the population relative to other health conditions [17]. In a strictly economic sense, the population of people who are dying of gun violence is getting less access to and benefit from the production of research than the population of patients dying from other comparable diseases. Said another way, when it comes to the disease and public health problem of gun violence [23, 24], the distribution of the benefits of research and access to actionable knowledge is inequitable and outright unjust. But there are also very real historical and political factors that are relevant to and need to be considered in discussions of gun violence prevention, including the cultural and constitutional importance of guns in American life. While these aspects are outside the scope of this

article, it important to recognize that any meaningful public health discussion will include these aspects. And, as specialists in treating the disease of gun violence, trauma surgeons should play a role in [gun violence prevention](#) and advocacy.

Trauma Surgery and the Moral Consequences of Taking Care of Patients Injured by Guns

Contemporary clinical ethical analysis of the issues posed by gun violence poses a different set of questions for the trauma surgeon. In contrast to the population-based ethics, contemporary clinical ethical questions are often concerned with the examination and judgment of personal conduct rather than theories of justice. Trauma surgeons' practice and larger professional community serve to define the qualities that constitute their professional identity. And, like all professional identities, trauma surgeons' professional identity prescribes and reflects a set of specific moral values and expectations of personal conduct. Although trauma surgeons are only a segment of health care professionals who care for victims of gun violence, an assessment of the trauma surgeon's professional identity suggests that trauma surgeons have a moral role to play in these patients' lives [25].

Trauma surgeons are responsible for tending the needs of victims of gun violence, surgical and otherwise, and for providing continuity of care that extends beyond inpatient care. They might be the only clinicians to provide follow-up care or outpatient continuity of care. Because of this relationship, trauma surgeons can and do take some responsibility for treating the effects of gun violence while simultaneously witnessing the unjust effects of gun violence and the complex economic and sociocultural determinants of health that sometimes coincide with gun violence.

Yet the system impedes trauma surgeons' ability to fulfill their responsibilities. The deficit in the available literature on gun violence, along with the unique constraints on gun violence research, places those who treat the injuries caused by guns in a moral dilemma. Trauma surgeons—who are both contributors to research and direct consumers of the advances of research—must fulfill a unique set of clinical and professional responsibilities within a special set of legal and economic constraints. More specifically, trauma surgeons work within a system that impedes their ability to fulfill their clinical and professional duties because policies impose severe constraints on their ability to conduct the research necessary to advance the treatment and prevention of the public health problem they specialize in treating. Thus, trauma surgeons are posed with an ethical question regarding their profession: what responsibility does trauma surgery—and do trauma surgeons and trauma centers—have in addressing the knowledge deficit and the advancement of public health interventions when it comes to the disease of gun violence?

At a practical level, it's common sense and common practice that most physicians with clinical responsibilities play some role in prevention of disease, even if that role is limited to the scope of the specialty, particularly if it's a matter of secondary prevention. Gastroenterologists screen for recurrent colon cancers, urologists monitor patients who have had prostate cancer, and cardiologists monitor and manage blood pressures and cholesterol levels after heart attacks. Why wouldn't we expect trauma surgeons to approach the effects of gun violence in the same way? In other words, if gun violence is a public health problem, just like strokes or cancer or HIV or motor vehicle collisions, then the profession of trauma surgery is, in part, defined by its role in gun violence prevention as well.

This aspect of trauma surgery's responsibility is also reflected in the activities of the societies that represent the trauma surgery community. Both of the largest professional associations—the American Association for the Surgery of Trauma and the Eastern Association for the Surgery of Trauma—have committees dedicated to policy, advocacy, and research on injury prevention that reflect an ownership, as a community, of the disease of gun violence [26, 27]. This ownership is also reflected in dedicated scientific sessions—including grand rounds and plenary and paper presentations at societal meetings—that are dedicated to the science and academic discussion of gun violence as a public health problem [28-30]. The activities of professional organizations reflect the professional identity and therefore the ethical duties of trauma surgeons, which are characterized by both treatment and prevention of violence. Thus trauma surgeons' professional societies give moral weight to their role in gun violence prevention [31, 32], and this moral weight is heavy enough to bestow a moral obligation upon individual trauma surgeons.

At a system-based level, this professional responsibility is reflected in the fact that the American College of Surgeons [trauma center verification](#) process requires a dedicated injury prevention program with dedicated participation by trauma physicians and nurses at level I, II, III, and IV trauma centers [33]. Hospitals aren't recognized as trauma centers without these programs that identify the root causes of injury, partner with other organizations in injury prevention efforts, and use monitoring tools to assess prevention effectiveness [33]. What this means for the trauma surgeon is that injury prevention constitutes not only a defining characteristic of a trauma surgeon's professional responsibility but also a fundamental part of any dedicated trauma system.

Conclusion

The trauma surgeon's fiduciary responsibility to patients affected by gun violence is special because it encompasses both treatment and prevention of gun violence, both clinical and public health ethics. An examination of the ethical questions posed by this responsibility reveals the moral values and standards we hold as the physicians who care for victims of gun violence. Whether this moral obligation was present before it was

reflected in trauma surgery's professional identity or stems from that identity, the trauma surgeon has a moral role when it comes to addressing the public health problem of gun violence in the US.

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MEDICINE AND SOCIETY

What Is the Institutional Duty of Trauma Systems to Respond to Gun Violence?

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Abstract

In the past, trauma centers have almost exclusively focused on caring for patients who suffer from physical trauma resulting from violence. However, as clinicians' perspectives on violence shift, violence prevention and intervention have been increasingly recognized as integral aspects of trauma care. Hospital-based violence intervention programs are an emerging strategy for ending the cycle of violence by focusing efforts in the trauma center context. These programs, with their multipronged, community-based approach, have shown great potential in reducing trauma recidivism by leveraging the acute experience of violence as an opportunity to introduce services and assess risk of re-injury. In this article, we explore the evolving role of trauma centers and consider their institutional duty to address violence broadly, including prevention.

A Missed Opportunity?

A 19-year-old woman is rushed to the trauma bay after sustaining a gunshot wound to the thigh. She is clinically stable. Neurovascular examination of the affected extremity is within normal limits. X-rays rule out a fracture. As part of her evaluation, a brief social history is obtained—she is asked about alcohol and drug use, her marital and employment status. However, no one on the trauma team asks about the circumstances of her injury or whether she feels safe returning home. A nurse instructs her regarding basic wound care, and she is discharged with a plan to follow up in the trauma surgery clinic. The encounter lasts 45 minutes. Within an hour, the same patient re-presents to the trauma bay in cardiac arrest after sustaining a gunshot wound to the head.

Most trauma centers do not possess the resources, workforce, or systematic approach necessary to address the social underpinnings of violence. In many cases, a decision to either screen for risk of violence or offer social support or referral to resources that could provide support is not standardized and is left to the discretion of treating clinicians. In this article, we explore the institutional duty of trauma systems to respond to the social causes of violence and how clinicians' conceptions of this duty might be influenced by attitudes on violence. Additionally, we discuss the use of hospital-based violence intervention (HBVI) programs as a preventive strategy designed to break the cycle of violence and reduce trauma recidivism, which is associated with an increased risk of

long-term mortality in the trauma population [1]. Although several small studies suggest that HBVI programs successfully reduce trauma recidivism, scholars argue that obtaining high-quality evidence of their effectiveness will be challenging, if not impossible, given difficulties related to studying the trauma population [2]. Rather than waiting for sufficient evidence regarding their effectiveness, we argue for implementation of HBVI programs within trauma centers.

Violence and the Burden of Disease

Violence is defined by the World Health Organization [3] as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation” [4]. Violence can be self-directed (i.e., self-injury), interpersonal (i.e., abuse), or collective (i.e., war). Interpersonal violence, or “violence between individuals,” includes family and intimate partner violence and community violence [5]. Hereafter, our use of the term “violence” refers to interpersonal violence.

In 2015, the age-adjusted rates of nonfatal violent injury and violent death were 694 and 19 per 100 000, respectively [6]. In 2012, firearm violence was a leading cause of death for teenagers and young Americans [7], and certain groups were disproportionately affected, with firearm homicide being the leading cause of death for black men between 15 and 34 years of age [7]. The physical, mental, sexual, and reproductive health consequences of experiencing violence often manifest as chronic conditions, resulting in considerable health burdens, costs, and lost productivity [8]. In 2010, the monetary cost of firearm injuries, a calculation that included “medical and mental health care costs, criminal justice costs, wage losses, and the value of pain, suffering and lost quality of life,” was estimated to be \$174.1 billion [9]. Additionally, the nonmonetary costs of violent injury—physical and emotional pain, disability, lost productivity, grief, fear, and demoralization—can affect the lives of all touched by violence.

For those who experience a violent injury, encounters with trauma systems are often a harbinger of serious recurrent injury or mortality. Trauma recidivism, or the “incidence of new, recurrent injuries requiring patient evaluation and treatment,” has been observed to be as high as 44 percent in some urban settings [10]. For trauma recidivists injured through gun violence, subsequent injuries tend to be increasingly severe [11]. Compared to their nonrecidivist counterparts, trauma recidivists have higher rates of mortality from penetrating trauma, estimated to be as high as 20 percent at five years [1].

Incorporating Violence Prevention into Trauma Care

In the US, the notion of an “ideal trauma system” was conceived in 1976 with the publication of *Optimal Hospital Resources for Care of the Injured Patient* by the American College of Surgeons Committee on Trauma (ACS-COT) [12]. Recognizing the potential for

variability in trauma care across the nation, ACS-COT developed treatment guidelines, which now serve as the framework for [verification](#) of individual trauma centers [12]. In the most recent edition of the guidelines, optimal trauma care is described as “prevention, access, prehospital care and transportation, acute hospital care, rehabilitation, and research activities” [13]. The decision to include prevention as part of this definition reflects the authors’ belief that injury prevention is the “most logical approach to reducing death and disability” [14]. Injury prevention is integral to reducing death and disability resulting from injuries, regardless of cause or intent.

While effective in reducing deaths and physical disability, medical treatment offered by trauma centers to persons who have sustained a violent injury is no panacea for the far-reaching effects of violent injuries. Providing these services is resource intensive and the services might not be available to all in need [15]. Even under ideal circumstances, trauma care cannot eliminate the far-reaching health consequences of violence experienced by patients, their families, and their communities. Given these limitations, prevention of violent injuries is a more effective means of reducing the burden of disease than offering care after an injury has occurred.

Trauma surgeons have been strong advocates for [injury prevention](#). They played a key role in the public health response to reduce motor vehicle injuries, which is now recognized as one of the ten greatest public health achievements of the twentieth century [8]. Those engaged in advocacy also worked to change the way motor vehicle injuries were perceived. Motor vehicle “accidents” came to be known as motor vehicle “collisions,” reflecting a departure from the notion that these events and the injuries they produce are unpredictable [16, 17]. Indeed, injury prevention experts note that a key aspect of promoting prevention strategies is altering the communication frame to raise awareness and change misperceptions [7]. By changing the nomenclature from accident, which implies unavoidability, to collision, with its implications for prevention, the injury prevention community embarked on a series of interventions that have markedly reduced disability and mortality resulting from motor vehicle injuries [16, 17]. In contrast to these broad efforts aimed at motor vehicle safety, violence prevention strategies remain underutilized, which might reflect attitudes regarding responsibility for violent injury.

Compared to evolving frameworks for understanding the nature of unintentional blunt injuries, perceptions of violent injuries have been much slower to change. Violence and its effects have long been viewed as consequences of moral failures [18, 19]. Similarly, in the past, people suffering from infectious diseases were subject to stigma, blame, and punishment [18, 19]. Unsurprisingly, the criminal justice system, which—unlike health care systems—emphasizes punishment and removal from society rather than individuals’ well-being and benefits to larger populations, has been our society’s primary response to violence [7, 18]. However, there is a growing literature that supports the

belief that violence is complex and intersectional, the result of a host of risk factors including repeated exposure of individuals and families to trauma, adverse childhood experiences, lack of investment in certain communities, and lack of assets or economic opportunities [20–22]. Paul Farmer et al., citing the work of Johan Galtung, describe how “social structures—economic, political, legal, religious, and cultural—that stop individuals, groups, and societies from reaching their full potential” contribute to violence [23]. Violence has some [features of a disease](#); it has the potential to spread, it clusters in certain environments, and it can be prevented [18, 20]. In his book, *Private Guns, Public Health*, David Hemenway notes that violence is amenable to a public health approach, which “emphasizes prevention rather than fault-finding, blame, or revenge” [24].

Hospital-Based Violence Intervention Reduces Recidivism

Influenced by the lessons learned from injury prevention of motor vehicle collisions and recent research, trauma care has begun to expand beyond tending only to the physical wounds caused by violence to addressing the conditions that engender violence in communities [18, 25]. Leaders within trauma surgery have called for standardized violence prevention initiatives, particularly in areas with a high prevalence of violence and trauma recidivism [26–28].

HBVI programs have emerged as a promising method of breaking the cycle of violence [26]. These programs are structured to address what we now understand to be proximate causes of violence, with an emphasis on the social determinants of health. HBVI programs leverage access to trauma care at the time of injury, which, for many, might represent their only access point to the health care system. Programs incorporate three components: addressing risks associated with violent injury, introducing services at the time of acute injury and hospital care, and providing culturally competent case management [26]. Participants are offered an extended period of case management services, including career counseling and access to community resources such as housing or legal advocacy [26].

HBVI programs have been implemented with success; however, these data are limited to single-institution studies [2], which have shown dramatic reductions in trauma recidivism, health care expenses, and mortality of participants [29, 30]. Aside from a handful of urban trauma centers [2], most have yet to adopt HBVI programs, citing a need for stronger evidence of their benefits and cost effectiveness. Unfortunately, an evidenced-based review of the literature failed to show significant benefits of these programs, citing high risk of bias, low quality of evidence, and heterogeneity among programs studied [2]. The authors also offer a number of more specific criticisms of these studies. They suggest that current measures of programmatic success do not fully account for indicators of value such as the patient’s experience [2]. Notably, the population most affected by interpersonal violence presents unique challenges for collecting accurate longitudinal data, as loss to follow up is common given participants’

high mortality, limited access to health care, and intersections with the criminal justice system [2]. Moreover, some institutional review boards have prohibited randomized controlled trials to test the effectiveness of HBVI programs on ethical grounds [2]. Finally, current policy bars federal funds from being awarded to researchers investigating gun violence [31], which is the most common cause of death due to violence [7]. This policy might influence investigators' decision to study HBVI [2].

Surgeons' Moral Responsibility

As put forth by the ACS-COT guidelines, trauma surgeons have a professional responsibility to work to prevent injuries, including those that result from violence. We trauma surgeons recognize the limitations of epidemiologic research in this area and our incomplete understanding of cause-effect relationships. However, we cannot let these lacunae prevent us from acting. It is critical that we weigh harms related to action (i.e., establishing a HBVI program) and those related to inaction (i.e., not responding to violence beyond providing acute care for injuries). The potential harm of offering case management services and community resources—such as when providing these services monopolizes a clinician's time without much benefit—are minimal compared with benefits suggested by the literature [32]. In contrast, the continued likelihood of violence-related harms in the absence of an HBVI program or other community responses is considerable. HBVI programs represent the best course of action, despite our lack of supportive data.

Pogge [33] argues that in addition to conducting a benefit-burden analysis, our moral responsibility to act also includes our taking responsibility for the outcome in question: "We ought to ensure that any institutional order we help impose avoids causing medical conditions and prioritises the mitigation of any medical conditions it does cause" [34]. When guided by this approach, individuals and institutions share a greater moral responsibility to address harms for which they have causal responsibility [33]. Just as economic, political, legal, religious, and cultural structures can perpetuate structural violence, so, too, can health systems by failing to offer available resources to members of certain patient populations when they initially present. Many of the techniques and resources utilized by HBVI programs are already utilized by health care systems, although they are not systematically allocated to victims of violence. Examples include rape crises counselors for patients who have experienced a sexual assault and dedicated case management teams to reduce readmission for patients with chronic illnesses such as heart failure. The limited application of these potentially helpful resources to specific groups, such as those with violent injuries, can be considered structural violence. If structural causes of violence are not adequately addressed when caring for victims of violent injury, clinicians effectively perpetuate the cycle of violence.

Although choosing to implement a program without clearly demonstrable benefits poses formidable challenges, implementing HBVI would not be the first time trauma centers

have implemented promising programs that are not evidence based. Universal screening and brief intervention (SBI) for alcohol use disorder have been required by ACS-COT since 2007 to be verified as a level I trauma center [8, 35]. Interestingly, the effectiveness of SBI had not been systematically documented prior to institution of this requirement [35]. In this instance, implementation did not depend solely on evidence but instead relied on plausible benefits and attempts to minimize the harms of alcoholism to individuals and society.

Violence Prevention is a Necessary Element of Trauma Care

Trauma centers are a nexus of health systems and communities. For many people, the emergency department is the sole access point to health care. Thus, these centers are uniquely positioned to offer preventive strategies to persons suffering from violence. Those who operate trauma systems and work within them have a professional and moral responsibility to offer violence prevention. HBVI programs represent an encouraging strategy for breaking the cycle of violence and reducing trauma recidivism. For institutions that choose to adopt HBVI programs, robust outcomes data should be collected and shared to facilitate dissemination of effective strategies and allow trauma systems to iteratively learn from each other. We cannot continue to sit idly by as violence destroys the lives of millions of Americans. The time has come to act.

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HISTORY OF MEDICINE

The Evolving Surgeon Image

Heather J. Logghe, MD, Tyler Rouse, MD, Alec Beekley, MD, and Rajesh Aggarwal, MD, PhD

Abstract

The stereotype of the abrasive, technically gifted white male surgeon is ubiquitous among members of the public and the medical profession. Yet modern surgeons are far more diverse and socially adept than the stereotype suggests. While the stereotype is largely a relic of days gone by, it continues to influence patients' expectations and surgeons' interactions with their clinical colleagues. The #ILookLikeASurgeon movement and subsequent #NYerORCoverChallenge demonstrate the changing face of surgery and the roles of social media in resisting the social and cultural force of long-standing stereotypes.

Legends of "Mean" and Disruptive Surgeons

Stereotypes are widely held, fixed, and simplified images or ideas of a particular type of person or thing [1]. For example, surgeons are often stereotyped as abrasive, arrogant, and difficult to work with [2]. Nevertheless, many trends, both historical and current, have contributed to the evolution of the image of the surgeon. This article canvasses some historical foundations of surgeon stereotypes and highlights how inclusive education, historical perspectives, and social media are contributing to a more inclusive and diverse range of images representing modern surgeons.

Surgeon Stereotypes

Numerous medical and nonmedical forums as well as blog posts address the stereotype of surgeons as less than "nice." Enter "why are surgeons so" into Google and suggested searches include "why are surgeons so mean" and "why are surgeons so arrogant" [3]. Similar questions regarding the dispositions of surgeons are posed on online forums such as Student Doctors Network, KevinMD, and Ask MetaFilter (all publically accessible) [4-6]. A 2015 article in *Pacific Standard* was titled, "Why Are So Many Surgeons Assholes? And How Can We Make Them Nicer" [7]? A nonsurgeon physician's blog post even seems to justify representations of surgeons as egotistical: "The Surgeon's Ego Has a Purpose" [8].

Legendary stories abound of angry and impatient surgeons yelling, throwing instruments, and ordering people out of the operating room [9-11]. In the words of a

community surgeon, surgeons “can have outbursts. Some of us curse, some throw instruments, others have tantrums” [12]. The surgeon blogger *Skeptical Scalpel* describes an episode early in his career when he threw a surgical clamp “so hard that it went out the door of the nursery, across a wide hallway and into an elevator the doors of which had just opened” [13]. This dysfunctional behavior has not been limited to male surgeons. It was a female surgeon who set down an instrument with such force that she broke a scrub technician’s finger [14]. Traditionally, and presumably, this behavior was tolerated with the justification that surgeons’ technical ability was all that mattered [9].

While times have changed—surgical education now emphasizes bedside manner, and throwing instruments and angry outbursts are now no longer tolerated and regarded as unprofessional—stories of such behavior can continue to influence perceptions and expectations of surgeons. One problem with stereotypes is that they can lead patients to believe it’s unreasonable to expect their surgeons to be professional and kind; in surgery, this can result in patients being guarded and on edge when discussing treatment plans with their surgeons [15]. Moreover, interprofessional colleagues might make erroneous assumptions about how they should behave—uncharacteristically submissively and deferentially, for example—when working with or consulting surgeons, based on stereotypes of surgeons’ interpersonal behavior or prior experience with poorly behaved or uncollegial surgeons. Both patients’ and practitioners’ expectations can be influenced by stereotypes. For example, surgeons who are members of a gender, racial, or ethnic minority group are often mistaken for other members of a health care team and support staff. One woman surgeon, for example, reported she was often presumed to be a nurse [16], and one surgeon of color reported being asked to remove food trays or being ignored [17]. Another consequence of negative surgical stereotypes is that they can deter medical students from seeking surgical residency training [18, 19]. Indeed, an ethical harm of stereotypes is that they can limit personal and professional expectations of others or ourselves and thus limit our conceptions of others’ or our own personal and professional agency and capacities.

Culture, Rigid Gender Roles, and Masculinity

As of 2015, roughly 81 percent of practicing general surgeons were male [20]. In orthopedic surgery, the number was 95 percent [20]. Although there are more women among the ranks of residents, men still account for 62 percent of trainees in general surgery and 85 percent of trainees in orthopedic surgery [21]. As a male-dominated profession, it is not surprising that many of the extreme behaviors associated with surgeons reflect rigid definitions of masculinity. Traditional masculinity is associated with being powerful, strong, and in control; self-sufficiency, sexual prowess, and monetary success are lauded and demonstration of weakness or vulnerability is frowned upon. These same characteristics play out in the stereotypes and [hierarchy of surgery](#). Medical students view surgeons as “self-confident,” “intimidating,” and “rude” and surgical culture as “competitive” [19]. These masculine stereotypes are seen in the popular

media portrayal of surgeons, such as Hawkeye and Trapper from the television series *M*A*S*H* and Marion Stone in the novel *Cutting for Stone* [22].

Exclusion of women and minorities from medical education and surgical discourse.

The Caucasian male stereotype of surgeons can be attributed in part to the same gender and racial oppression that has barred women and minorities from achieving formal medical education. Prior to the Civil War, freed slaves who wanted to obtain medical training typically had to go to Canada or Europe. After the Civil War, American blacks continued to face barriers to obtaining a medical education, as they were largely excluded from existing medical schools [23]. By 1910, when Abraham Flexner's report on medical education was published, there were three women's medical schools and seven black medical schools in existence [23, 24]. The report led to the closing of such medical schools, with only one woman's medical school and two black medical schools surviving the following decade [24].

Masculine surgical culture. Another factor in the Caucasian male stereotype of surgeons is the biased written and oral history of surgery, which often excludes women and minorities and even misattributes their accomplishments. The most famous surgeons—from the Indian surgeon Sushruta of the sixth century BC, to Al-Zahrawi of the Islamic Golden Age, to the historical figures of the last two centuries—have been male. In fact, “the father” of different aspects of surgery is a commonly used title, never “the mother.” In United States history, minority surgeons are similarly underacknowledged. Of the 24 “pioneer surgeons” listed by Wikipedia, not a single one is a woman or person of color [25], despite their notable contributions to surgery [26-31].

Creating an Inclusive Image Reflective of Today's Surgeons: From Education to #ILookLikeASurgeon

Once stereotypes are established, they are not easily changed, even with abundant evidence to falsify them. However, stereotypes can evolve through repeated exposure to persons who contradict the stereotype [25].

Overcoming barriers to education. Over time, women and minorities have been increasingly integrated into traditional medical schools. The year 2017 was the first that more women (50.7 percent) than men matriculated in medical school and that the percentage of accepted women students was representative of the US population (50.8 percent female) [32, 33]. However, the proportion of American minority medical students is not reflective of the US population. In fact, fewer black men entered medical school in 2014 than in 1978 [34]. Efforts to promote diversity in medicine include improving primary education and increasing access to mentors in medicine for communities of color [26].

Inclusive interpretation of history. Acknowledging the historical and modern obstacles faced by female surgeons and surgeons of color as well as their numerous contributions

despite these barriers is an essential step in creating a more inclusive culture of surgery. Many might be surprised to learn that the earliest evidence of women in surgery in Western civilization dates back to 3500 BC [26]. Examples of contributions by women and minorities throughout history are not as infrequent as their underrepresentation and limited inclusion would suggest. For example, in the fourth century AD, Aspasia was considered a medical genius whose writings influenced male surgeons centuries later [26, 27]. The writings of “Tortula” of Italy in the eleventh century AD were similarly influential [26]. Examples of minority surgeons who contributed to surgery include Daniel Hale Williams, who performed the first successful open heart surgery in the United States in 1893; Charles Drew, who was instrumental in developing blood banking during the second world war; and Vivien Thomas, who had a tremendous impact on surgery through his role as a surgical technician for Alfred Blalock [28-31]. Inclusion of and appropriate historical representation of these contributions in the surgical canon validates the presence of women and minority surgeons in the profession.

#ILookLikeASurgeon, #HeForShe, #NYerORCoverChallenge and beyond. In 2015, the first author (HJL) tweeted the suggestion for an #ILookLikeASurgeon hashtag to defy gender stereotypes in surgery, and the surgeons on Twitter responded en masse [35]. By November 2015, the hashtag had been tweeted nearly 40 000 times, resulting in more than 128 million impressions [36]. Both female and male surgeons tweeted photos of themselves inside and outside of the operating room. Patients lauded the images and tweets as “humanizing the profession” [37]. For perhaps the first time, surgeons had a means to put forth images that represent them. Some have argued that the hashtag should be #IAmASurgeon [38, 39], unaware that the goal of the hashtag is to establish the reality that a surgeon can look like anyone. The goal has never been to help women surgeons believe they are surgeons but rather to celebrate the diversity of the field and encourage an image of surgeons inclusive of all genders, ethnicities, and personality types [40].

In the spring of 2016, Caprice Greenberg’s presidential address to the Association of Academic Surgery set forth the gender disparities, implicit biases, and other obstacles faced by women in surgery [41]. She encouraged the audience to respond by continuing to use the #ILookLikeASurgeon hashtag and challenged men to demonstrate their support for gender equity with tweets additionally tagged with #HeForShe. HeForShe was started in 2014 by UN (United Nations) Women as a solidarity campaign for the advancement of women [42]. Once more the surgical community responded in force, and a #HeForShe task force has been created within the Association of Women Surgeons [43].

Later that spring, the *New Yorker* featured a depiction of four female surgeons’ faces as seen from the perspective of a patient lying on the operating table under the light, their hands, eyes, and facial contours being unambiguously female. Realizing the uniqueness

of this image, Susan Pitt used the #ILookLikeASurgeon hashtag to launch the #NYerORCoverChallenge, challenging women to take similar photos under their own operating lights [44]. With the social media community established, the positive response to the hashtag was more tenacious than the initial response to #ILookLikeASurgeon. Notably, in our experience, it was often the male surgeons of the department taking the photos and tweeting and retweeting them.

The *New Yorker* cover suggests an evolving image of modern surgeons. The response of surgeons, both male and female, in harnessing social media to amplify the impact of that image normalizing women's presence in the operating room is a testament not only to the power of social media but also to the motivation of surgeons to show themselves, their colleagues, their patients, and their communities who they are.

Conclusion

To stereotype is arguably human nature, since it reduces the amount of mental processing needed when interacting with stereotyped group members. That is, one benefit of stereotyping is that a single stereotype presumably reflects group members' salient characteristics and abilities. There's trouble with that assumption, however. As we've argued here, in the case of surgeons, many have become frustrated with the demographic and personality confines of an outdated stereotype that negatively impacts how they are perceived by colleagues and patients. Through increased diversification of the surgical workforce and through amplification of caring, empathic voices of today's surgeons by social media, surgical images can more truly reflect and represent modern surgeons.

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IMAGES OF HEALING AND LEARNING

***Memento Mori* and Photographic Perspective of Roadside Trauma**

Artwork by David B. Nance, JD, and captions by David B. Nance, JD, Sara Scarlet, MD, and Elizabeth B. Dreesen, MD

Abstract

David Nance's photographs invite us to cross the liminal space between road and roadside and to consider the experience that trauma surgeons share with injured patients and the families of the injured and the dead. Just as trauma surgeons use the tools of science and surgery to make order out of the chaos of "the scene," so patients' families use art, found objects, and grief to transform anonymous roadsides into specific, personal remembrances. Bound together by the uncertainties of trauma, we can all stand at the side of the road bearing witness to both the inevitability and unpredictability of death.

Places of Rest

We are a highway nation, dotted by roadside memorials. Millions of us have seen these as we gaze out the windows of our whizzing automobiles. But how many of us have ever stopped for one? As part of his project, *Descansos: Roadside Memorials on the American Highway*, David Nance pulled off the road and photographed them as he travelled throughout the American Southwest. To Nance, these stark and moving tributes to people who died in motor vehicle collisions embody both the urgent simplicity of American folk art and the deep spiritual tradition of *Memento Mori*—reflections on and reminders of our transience and mortality.

Descansos mark sites where quiet roadsides were made suddenly chaotic. To trauma surgeons, these sites were once "the scene"—a term that tends to separate these spaces and what transpires therein from everyday life. When emergency medical services (EMS) personnel transport survivors from these scenes, they describe them using a standard narrative of mechanism, damage, injury, assessment, and initiation of treatment. As trauma surgeons hear the EMS report, we might see the scene in our mind's eye, but almost immediately we forget it as we move to resuscitate the injured person who lies in front of us and commands our full attention.

Families often ask us what happened at these scenes—what caused the collision, why one person survived when another didn't. Mostly we don't know. Although trauma surgeons tend to be sure and assertive when treating patients, we are most often

profoundly uncertain about exact events that led patients to require our care. Nance's *Descansos* images offer alternative depictions of these scenes.



Figure 1. *Jim Roybal, Cecil Reagan.* Photo: David Nance

Caption

US Hwy. 24, near Camp Hale, Eagle County, Colorado. People who experience trauma can experience powerful memories of their trauma long after an event has occurred. For passersby, roadside memorials can also provoke thoughts and feelings of trauma long after events have transpired.



Figure 2. *John Kunding*, 12-31-73. Photo: David Nance

Caption

US Hwy. 91, on the descent from Fremont Pass, north of Leadville, Colorado. Leaning out from a steep grade and driven deep into the mountainside, this wooden cross appears to be fixed to the type of metal post that supports roadway signs. Constructing this memorial was likely to have been dangerous and difficult. Perhaps the painstaking act of creating this tribute and the risk taken to do so by its creators somehow symbolizes the magnitude of their loss.



Figure 3. *nacio 8 29 75*. Photo: David Nance

Caption

US Hwy. 24, in Tennessee Park, north of Leadville, Colorado. Most roadside memorials bear names of the dead. The bereft go unmentioned, their presence subtler. To passersby, grievors remain anonymous. This memorial, however, appears to display names of those left behind.



Figure 4. *Unmarked.* Photo: David Nance

Caption

US Hwy. 285, south of Fairplay, in South Park, Park County, Colorado. Most memorials face the roads by which they stand. Nance found these two unmarked crosses to be unusual, one north facing and other looking to the south, both set against a barren landscape.

Missing Memorials

Our society often does not create permanent memorials or dedicate spaces to people who have experienced trauma as a result of interpersonal violence. How should we account for apparent differences in attitudes about how to memorialize motor vehicle trauma victims and victims of trauma resulting from interpersonal violence?

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SECOND THOUGHTS

Does Family Presence in the Trauma Bay Help or Hinder Care?

Benny L. Joyner, Jr., MD, MPH

Abstract

Family presence during a pediatric resuscitation remains somewhat controversial. Opponents express concern that family presence would be detrimental to team performance and that exposure to such a traumatic event could put family members at risk of posttraumatic stress. Proponents argue that family presence affords families a sense of closure by easing their anxieties and assuring them that everything was done for their loved ones in addition to improving clinicians' professional behavior by humanizing the patient. This article will review the literature on the potential benefits and pitfalls of family presence during a pediatric resuscitation.

Overview of Questions about Family Presence in a Trauma Bay

Few events in a physician's life are as emotionally charged as the arrival of a pediatric patient in a trauma bay. A previously healthy child arrives with a life-threatening or life-limiting injury after a catastrophic event with family members in tow, distraught and devastated. The clinical team mobilizes to stabilize the patient—triaging and evaluating injuries, performing invasive procedures, and providing life-saving therapies. In many instances, the family is held outside the trauma bay. Should the family be permitted to enter? This question remains a subject of significant controversy, as evidenced by the fact that while studies suggest benefits of family presence, the practice varies widely [1-3]. According to Nibert, a "moral conflict exists because two opposing obligations collide: an obligation to the family members who desire to be present with their loved one during CPR and an obligation to the healthcare providers who do not want patients' family members to witness resuscitation efforts" [4].

What obligations do we owe our patients with respect to allowing their family members to be present during a resuscitation? Are we acting in the patient's best interest by keeping family members away during a resuscitation? Are we truly preventing harm, alleviating suffering, and being just when we keep family members out of the trauma bay? The answers to these questions are complex and strike at the heart of the nexus between patients' rights and clinicians' rights and obligations.

The Debate over Family Presence

Family presence during resuscitation (FPDR) can be defined as “the presence of family in the patient care area, in a location that affords visual or physical contact with the patient during resuscitation events” [5]. The controversy surrounding FPDR first emerged in the literature in the early 1980s when a hospital in Mississippi described a situation in which two family members demanded to be present during the resuscitation of their loved ones [6]. Studies of FPDR have shown that family members and staff who were involved in resuscitations report positive attitudes about the practice [1-3, 7-9]. In one study, the majority of family members reported being able to understand the therapeutic interventions performed, to advocate for their child, and to calm or reassure their child during such an event [1]. Families also believe that FPDR is a parental right [1, 8], and clinicians believe that it can help both the medical team and families whose child dies [2]. Moreover, some studies suggest that FPDR does not negatively impact clinical performance or resuscitation efforts [9-12].

Despite these findings, FPDR remains a controversial topic [9, 13]. A prominent argument is that parental presence during pediatric resuscitations should not be permitted because it is not in the child’s best interest. Parents might misunderstand treatments provided to their child, which could create a stressful environment for staff and contribute to rather than relieve patient anxiety [2]. Moreover, task performance of inexperienced staff or physicians participating in the resuscitation might be negatively impacted by parental presence [2]. Additionally, clinicians have argued that it should be up to them—not families—to determine in which situations family presence ought to be granted [14, 15]. Finally, those opposing FPDR could rightfully argue that the data upon which these conclusions are drawn are scant, as many surveys have poor response rates [8].

Because patients, family members, and clinicians can have different perspectives on whether FPDR helps or hinders trauma care, the four ethical principles described by Beauchamp and Childress—respect for autonomy, nonmaleficence, beneficence, and justice [16]—will be used here to evaluate FPDR from each of these stakeholder perspectives.

Patient Perspective

From the patient’s perspective, the safe, efficient, equitable, compassionate, and effective delivery of care is of paramount importance. Pediatric trauma patients—arguably the most vulnerable because they are unable to advocate for themselves—must rely on clinicians acting in their best interest and on proxies (usually their parents) speaking on their behalf. Because of the lack of data on pediatric patients’ perspectives, studies of family presence during pediatric resuscitation invoke the principles of respect for autonomy, beneficence, nonmaleficence, and justice to support their arguments [13-15].

Beneficence. Those supporting FPDR argue that it can benefit the patient, as it enables parents to provide pediatric patients with [emotional support](#) during a traumatic and emotionally frightening procedure and clinicians with important, timely, and relevant medical information to assist the resuscitation team in their efforts [1, 8, 14]. One prospective study demonstrated that family presence does not prolong time to computed tomographic (CT) imaging or resuscitation completion for pediatric trauma patients [10]. Another study demonstrated that FPDR does not negatively impact the performance of advanced trauma life support tasks [11]. Given the positive psychological impacts and lack of negative clinical impacts, one could argue for an overall net positive impact of family presence for the patient. However, opponents of FPDR voice the concern that parental anxiety and emotion might contribute to the anxiety of the distressed and ill child, further complicating treatment management [14, 15]. They thus tacitly invoke the principle of beneficence in arguing that removal of the parents removes the potential for harm to the patient.

Nonmaleficence. Those in support of FPDR also argue that not allowing family members to be present would prevent necessary information from being delivered to a patient's caregiving team, delay necessary consents, and leave a pediatric patient unsupported during a chaotic trauma resuscitation [12, 13], delaying care and causing additional physical or psychological harm or injury.

Justice. The principle of justice requires that we treat all patients fairly and equally, but families are not universally allowed or invited to be present during a trauma resuscitation. Do we allow those who are the most vocal to be present, thereby allowing only certain patients to experience the benefits of FPDR? However, if a family member is excluded from participation by medical staff due to inconsolability or emotional outbursts, are we not depriving that family member's child of the same opportunity as another child simply due to a family member's understandable grief? One approach to rectifying this inequity would be the adoption of an institution-wide policy of family presence during pediatric resuscitation, which has been shown to have no adverse effects on patient care [12].

Family Perspective

Beneficence. Parents view positively having a first-hand account of events and serving as their child's advocate and comforter [1]. Families also believe they have the right to be present during these intimate and personal events [1, 8] and that being present can be therapeutic and provide reassurance that everything that could have been done, was done [2, 13]. Some could argue that since family presence would be primarily for the potential benefit of the family member and not the patient, family presence should not be permitted and could indeed hinder the resuscitation of the pediatric patient. However, as discussed above, FPDR allows family members to provide information that could

facilitate decision making, and it eliminates the need for explanation of services being provided [1, 8]. In this sense, FPDR also upholds the principle of [respect for family autonomy](#).

Respect for autonomy. An important caveat is that FPDR must be allowed in a way that ensures that families are supported and informed. In most situations, this is achieved through a family support facilitator [1, 3, 9, 13], because family presence during a trauma resuscitation absent the context with which to frame such efforts can be detrimental to the family present [1, 9, 12].

Nonmaleficence. By forbidding FPDR, are clinicians inadvertently causing long-term harm to families, as families that were not present report heightened feelings of anxiety and posttraumatic stress [17]? Indeed, we could even (inadvertently) be causing harm to families that realize only too late that were it not for their fear of challenging the health care team, they could have been present for their child's resuscitation.

Treatment Team Perspective

Beneficence. The principle of beneficence and, in particular, the patient's best interest, is often invoked to explain clinicians' arguments both supporting and opposing FPDR [14]. When used to oppose FPDR, however, this rationale is problematic because the concept of a patient's best interest not only is subjective but also is often inconsistently applied [14]. In addition, the view that FPDR is not in the patient's best interest is not supported by the literature, as parents who have been present during resuscitations have reported decreased anxiety, a better understanding of their child's condition, and a desire to be present again during their child's medical care [1, 6-8, 10, 12]. Nevertheless, clinician attitudes and beliefs about FPDR still remain a source of contention [7].

Nonmaleficence. Clinicians opposed to FPDR argue that it would have a negative impact on the treating team and its ability to provide appropriate care [2, 7]. Pediatric trauma resuscitations are often chaotic, requiring many invasive procedures, and, on occasion, the inevitable outcome is the death of a patient. Given these factors, emotions often run high and clinical staff fear that the added stress of family presence would negatively impact the resuscitation and lead to worse outcomes [2, 7, 18]. Although this perspective is supported by anecdotes and case reports, negative impacts are not borne out in studies of family presence during pediatric trauma resuscitations [6, 7, 9-11]. Finally, although a simulation study demonstrated a delay in time to first shock during a simulated adult medical code as evidence that care could be delayed [19], this finding has not been validated in other studies in the pediatric setting [8].

Ethical Grounds of FPDR Permissibility

The various impacts of FPDR can be analyzed using a structured, principled approach. Although it is an extremely complex issue with many potential impacts on the patient,

family, and trauma team, FPDR is ethically permissible given its significant potential benefits (and minimal risk) for pediatric patients and their families. For this reason, a more structured global approach to this topic should be undertaken to address the inequities that currently exist in our system—a system in which family presence in the trauma bay is dependent upon geography and level of advocacy.

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CORRESPONDENCE

Metaphorically or Not, Violence Is Not a Contagious Disease

Michael B. Greene, PhD

This correspondence responds to Gary Slutkin et al.'s "[How the Health Sector Can Reduce Violence by Treating It as a Contagion](#)," which appeared in the January 2018 issue, 20(1), of the AMA Journal of Ethics.

Slutkin, Ransford, and Zvetina argue that violence is an epidemic that is efficaciously treated as a contagious disease. The tradition of framing [violence as a preventable public health issue](#), dating from the 1979 Surgeon General's report [1], certainly has proven invaluable in developing violence prevention strategies and has helped in our understanding of the multiple and reciprocal links among violent victimization and health and behavioral health problems. For example, the American Academy of Pediatrics issued a protocol in 1996 to respond to adolescent assault victims and outlined the dangers of a treat-and-release approach [2]. We have also learned much about the nature and treatment of the psychological trauma that arises from exposure to violence as a witness and as a victim. These advances are certainly highlighted and endorsed in this article. Nevertheless, to approach violence with a "disease" model is misleading at best, and could be harmful.

First, the authors describe violence—more particularly, homicide—as an epidemic. However, for a "disease" to be categorized as an epidemic, the observed prevalence rate must increase over the expected prevalence rate. Thus we need to be careful about which baseline we choose for the expected prevalence. If, for example, we choose the late 1980s and early 1990s as our base—a period in which homicide rates spiked across the country [3]—we would conclude that current levels of violence represent a substantial reduction in violence perpetration and victimization. Moreover, the homicide rate in the United States has generally declined since the mid-1990s [4]. This is not to suggest that current homicide rates are acceptable but rather that we need to be careful in the terminology we use to describe these rates.

More importantly, we need to be clear that there are no "violence bacteria" or "violence viruses," no violence parasites or pathogens. Violence is not airborne or contagious by touch or breath. There is no violence "germ" within individuals that can be suppressed. Certainly, as acknowledged by the authors, there are neighborhoods and communities in which violence is substantially concentrated. However, this geographic concentration of violence is driven not by contagion from person to person. Rather, geographic

concentration of violence, as documented in a large literature on the structural covariates of homicide and related topics, is driven by known geographic risk factors, including but not limited to urbanicity or higher levels of population size and density [5]; high levels of intergenerational and concentrated poverty and associated poor housing, unemployment, and underfunded schools [5, 6]; structural racism [7]; high levels of lead exposure [8]; low levels of trust between community members and law enforcement and no accountability for unwarranted use of force by the police [9]; low levels of collective efficacy (i.e., social cohesion and willingness to intervene for the common good) [10]; absence of family cohesion as measured by male divorce rates [5]; and inadequate outlets for participation in prosocial and empowering activities as measured by the number of not-for-profit neighborhood organizations [5, 11].

The primary driver of violence is not some abstract violence germ but rather has to do severe deprivations and oppression that the residents in such neighborhoods face on a daily basis. So the parallel in public health should not be the contagious disease model but rather the effects of [toxic environments](#) that we know are the root of noncontagious diseases such as asthma and malaria. The most efficacious strategies to reduce the prevalence of such diseases involve efforts to reduce the environmental toxins responsible for the diseases—infectious mosquitoes, contaminated water, and so on. We should all welcome programs like Cure Violence that undertake to alter the norms, such as retaliatory violence, that fuel violence. Nevertheless, an exclusive focus on such norms will not substantially reduce the problem. Without a central focus on the reduction of oppressive economic factors that kill hope, the omnipresence of failing schools, the absence of opportunities to thrive and to make a difference, and the ever-present impact of structural racism, we will never cure the so-called epidemic of violence.

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CORRESPONDENCE

Response to “Metaphorically or Not, Violence Is Not a Contagious Disease”

Gary Slutkin, MD, Charles Ransford, MPP, and Daria Zvetina

This correspondence responds to Michael B. Greene’s letter to the editor, “[Violence is Not a Contagious Disease](#),” which appears in the May 2018 issue, 20(5), of the AMA Journal of Ethics and was written in response to Slutkin et al., “[How the Health Sector Can Reduce Violence by Treating It as a Contagion](#)” in the January 2018 issue, 20(1), of the AMA Journal of Ethics.

Greene is correct in recognizing that violence has for several decades been seen as a preventable public health problem. However, violence also meets the definitions of both “disease” and “contagious.” In challenging this fact, Greene advances two common misunderstandings about the concept of *violence* as a disease and of *contagious*, which we address below.

First, a disease is defined as “any deviation or interruption of structure or function of a part, organ, or system of the body, as manifested by characteristic symptoms and signs (causing morbidity and mortality)” [1]. Indeed, as discussed in our article [2], violence affects the structure and function of the brain, has characteristic signs and symptoms, and causes morbidity and mortality. Violence also demonstrates the characteristics of an epidemic type of disease, specifically through its clustering, spread, and transmission [2]. The transmission of violence has been well documented for child abuse, community violence, intimate partner violence, and suicide [3, 4] as well as between syndromes, such as community violence exposure increasing the risk of perpetrating domestic violence [5].

People can hesitate to accept violence as an epidemic disease because of difficulty identifying the agent, pathogen, and vector. While pathogens are commonly understood as biological agents, diseases are often caused by nonbiological agents. For example, certain chemicals are understood to be agents for development of diseases, including several autoimmune diseases [6]. Similarly, for contagious disease an organism is not required, only that some exposure to an agent leads to more of the disease or that the disease spreads from one to another [1]. Furthermore, many infectious diseases do not have vectors but are instead transmitted directly (e.g., person to person, through physical contact) or indirectly (e.g., through a contaminated surface or object). Means of transmission for various diseases are not limited to touch and breath but also include ingestion and even social contact. No biological germ is required. Violence does not have a biological or a vector agent. What defines violence as contagious is that it can spread

from person to person with one event leading to another and that it is a risk factor for itself, meaning that exposure to violence is a risk factor for the formation of violent behavior.

As Greene states, the term “epidemic” by definition refers to a rate of prevalence that is higher than expected, which he presumably believes not to be the case for lethal violence when the current rate is compared to the rate in the 1990s, which was higher [7]. We offer a different baseline—rates of killing in other developed countries—which tend to be 1 to 2 killings per 100 000 [8]. By contrast, in 2016, the national rate of killing in the United States was 5.3 per 100 000 [9], and the rate in the city of Chicago was 28.1 per 100 000 [10].

Greene attributes violence to other social, economic, and environmental factors—such as poverty, poor schools, and segregation—based on the observation that violence concentrates in areas that also have a concentration of these other factors. It is important to note that many infectious diseases are also often concentrated in areas with these same characteristics, such as tuberculosis, malaria, and HIV/AIDS, yet no one today would suggest that they are the actual causes of those diseases. As with other infectious “diseases of poverty,” these and other factors are best understood as risk factors that increase a person’s susceptibility to disease—in this case, to violence.

While these risk factors are important and need to be seriously addressed, as with other contagious problems, interrupting transmission and changing behaviors can cause dramatic reductions in prevalence even in conditions of poverty, poor schools, and segregation and in the presence of other risk factors, as is evident in other epidemic control cases. Waiting decades to reverse conditions by focusing solely on these [environmental risk factors](#) is unacceptable and could inhibit the life-saving work that can be applied in these conditions.

There is still much to be worked out in understanding the pathogenesis of violence as a contagious health problem, as is the case for many other health problems, but enough is now known—about how violent behavior is formed, how it affects people including their brain and other systems, and how it spreads among individuals and within communities—to change how we understand and treat violence. Even for those not willing to accept violence as a contagious disease, its contagious nature and role as a health problem can still be recognized and utilized to achieve better outcomes. Violence is a contagious disease and by treating violence as a contagious disease, the health sector can work to cure it.

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