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Bringing palliative care to the critically injured

by **Anne C. Mosenthal**

Palliative care is the treatment of patients with advanced and serious illness where alleviation of symptoms, whether they are physical, emotional or spiritual, is paramount. It has traditionally focused on relief of suffering from chronic diseases at the end of life, such as cancer and dementia, not on the care of those with sudden and acute illness. As physicians caring for the severely injured and the critically ill in the intensive care unit

bereavement support and appropriate withdrawal of life support, were essential to the care of trauma patients. This realization raised the question of not only how palliative care could be integrated into trauma care, but when, and for which patients.

To research the application of palliative care to trauma we needed to understand the epidemiology of death on the trauma service. With funding from the Project on Death in America, Patricia Murphy, RN, PhD, and I studied the deaths in the ICU over a four year period. In particular, we hoped to identify a population of patients for whom one could predict a poor outcome and who might benefit from early palliative care intervention. In addition, we assessed the existing care provided for any evidence of palliative care, such as end of life decision making, communication or withdrawal of life support. Among 108 deaths in the surgical ICU, 54% died with a do not

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(ICU), it seemed that palliative care would be irrelevant to our patients. But in reality, 13% of our trauma patients admitted to the surgical ICU will die, many with unknown pain and suffering at the end of life, and many with families in crisis. An additional proportion will go on to have significant disability with impaired quality of life. I began to realize that some components of palliative care such as relief of pain and symptoms, good communication,

resuscitate (DNR) order in place and there was clear evidence of communication and end of life decision making between the physicians and family. Despite this, there was little active palliative care for dying patients, and the vast majority (91%) died on ventilator support. Furthermore, when we tried to identify any objective factors related to severity of illness, prognosis or patient characteristics, only older age was associated with a DNR order.

There was great variability in physician practice in end of life care. It was clear that among critically ill trauma patients, there is great uncertainty as to who is dying, and when, and if it is time to move to palliative care.

These realizations raised more questions. Was this uncertainty in prognosis among trauma patients, in effect, a barrier to good end of life care? Did it prevent trauma surgeons from making the transition to palliative care for their patients and if so, were there ways to affect their practice? Educational programs alone are known to have little effect on physician practice, so we developed a peer review program on end of life care which was integrated into the pre-existing morbidity and mortality review and quality improvement program. After one year we studied the effects of this program. Documentation and discussion of end of life care in the mortality reviews increased from 13% to 26%. More importantly, while there was no change in mortality or DNR rate, DNR orders were written two days earlier and withdrawal of the ventilator from dying patients more than doubled.

Due to the uncertainty of prognosis in acute trauma illness, we hypothesized that the best way to bring quality care at the end of life was to apply the principles of palliative care to all patients, regardless of their likelihood of survival. This means providing pain and symptom management, bereavement/family support and good communication to all critically injured patients and their families. While our previous studies taught us a good deal about how and when trauma surgeons implement palliative and end of life care, we still understand little about the quality of care at the end of life and what type of palliative care is important for patients and families in the trauma ICU. Preliminary evidence suggests that communication with healthcare providers and attention to symptom management are as important to patients and families as the level of medical care. Studies on patient and family centered outcomes in the ICU are ongoing. We are currently investigating pain assessment and management in both survivors of trauma care and those at the end of life. We also hope to better understand the role of bereavement and family support in the care of critically ill trauma patients and how this affects end of life decisions, as well as long term quality of life, for the surviving patients and their families.

Anne C. Mosenthal, MD, is associate professor of surgery and chief of surgical critical care at UMDNJ-New Jersey Medical School (NJMS). She earned her MD from Dartmouth Medical School in 1985. After completing her surgical critical care fellowship at Massachusetts General Hospital and surgical residency training at the University of Massachusetts Medical Center in 1992, she joined the faculty at NJMS. Over the last five years, her clinical and research interests have focused on palliative care and quality of life outcomes in trauma and critical care. Together with Patricia Murphy, RN, PhD, she has developed one of the first programs on palliative care in trauma/critical care in the country. Dr. Mosenthal was awarded a grant as Faculty Scholar for the Project on Death in America by the Soros Foundation. Currently, she and Dr. Murphy are funded by the Robert Wood Johnson Foundation to develop and study palliative care in the surgical ICU. 🐾

Using MRS to predict emergence from coma state after traumatic brain injury

by **A L L E N M A N I K E R** a n d **F R A N K H I L L A R Y**

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his research utilizes magnetic resonance spectroscopy (MRS) to measure brain metabolites after traumatic brain injury (TBI). These metabolites have been shown to have predictive value in emergence from coma state. Tracking metabolites offers the potential for advancing the treatment of TBI and providing further understanding of which individuals may or may not make good functional and cognitive recovery after injury. This research will better refine the protocols utilizing MRS to study these metabolites and help to define their predictive value for the treatment of injured patients.

Traumatic brain injury (TBI) has been defined as an injury to the brain resulting from an external mechanical force, which may lead to significant impairment in the individual's physical, cognitive, and psychosocial functioning. These types of injuries may occur as a result of automobile accidents, falls, sports related incidents, and assaults. Each year one million people are treated and released from hospital emergency rooms, 230,000 of these individuals are hospitalized and survive, and 50,000 fatalities occur because of traumatic brain injury. As a result, a large number of individuals with TBI endure life-long impairment and disability. The impact on our society from healthcare costs and lost wages ranges into the billions of dollars.

During the early moments of hospitalization following TBI the patient is stabilized and the head is scanned using computed tomography (CT). Injury severity is rated using scales such as the Glasgow Coma Scale (GCS) which assesses and combines into a single numeric score eye opening, verbal response and motor response. The scale ranges from 3 to 15, and gives a consistent thumbnail picture of the severity of the injury and what level of survival can be expected. This scale, in combination with a neurological examination and CT scan, is used to make operative and medical intervention decisions in the early period immediately post TBI. Operative evacuation of epidural or subdural hematomas or even of irreversibly damaged, contused brain is frequently undertaken within the first hours of a patient's arrival in the Emergency Department.

A monitor inserted into the parenchyma of the brain allows the tracking of intracranial pressure (ICP), which, if elevated, may result in damage to potentially salvageable brain tissue. Subsequently, in the immediate post admission phase, control of ICP and another important indicator, cerebral perfusion pressure (CPP), are monitored closely. Maintenance of appropriate blood pressure, electrolyte balance, blood gasses, fluid intake, and seizure prophylaxis are also among the mainstays of the acute care of the TBI patient.

These interventions allow for improved chances of the patients' survival. However, this care still cannot ensure the patients' functional or cognitive recovery. The question of who will recover to resume a normal functioning life is much more problematic and variable than the ability to predict survival.

Recovery from TBI has traditionally been monitored by scales that measure gross behavioral changes such as the GCS or the Galveston Orientation and Amnesia Test (GOAT). While the GCS serves a critical function at the time of hospital admission and during early treatment, it remains a more accurate predictor of outcome for patients with scores at the extremes and a weak predictor of outcome for patients who achieve mid-range scores.

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continued on page 10