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Trauma patients safe from mortality risks associated with so-called 'weekend effect'

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People who are in car crashes or suffer serious falls, gunshot or knife wounds and other injuries at nights or on weekends do not appear to be affected by the same medical care disparities as patients who suffer heart attacks, strokes, cardiac arrests and other time-sensitive illnesses during those "off hours," according to new research from the University of Pennsylvania School of Medicine. In contrast to previous, multi-hospital studies showing that patients treated for cardiac or neurological emergencies overnight and on weekends are more likely to experience complications and even die than those who come to the hospital on weekdays, the new pilot findings suggest that trauma patients are insulated from this so-called "weekend effect" tied to the time of day in which they're brought to the hospital.

The new study, which will be presented at the Eastern Association for the Surgery of Trauma on January 22, points to the trauma system's unique organization and staffing as a built-in protection for these critically injured patients. A regionalized system involving both ambulance and helicopter transport dictates that trauma patients be brought to facilities that meet strict requirements for round-the-clock staffing and capabilities for emergency medicine, radiology, surgery, and post-operative intensive care. One key differentiator from most other medical and surgical specialties - in which staffing and resources vary on nights and weekends -- is that Level 1 trauma centers like the Hospital of the University of Pennsylvania, where the research was conducted, are required to have an attending trauma surgeon immediately available 24 hours a day, seven days a week, 365 days a year.

"Patients arriving at a hospital with a heart attack or a stroke may find themselves at a facility unable to optimally manage their condition - especially at night and on the weekend. We found that no matter when you are injured, you get the same type of care when you are brought to a trauma center," says lead author Brendan G. Carr, MD, MA, MS, an assistant professor in the departments of Emergency Medicine and Biostatistics and Epidemiology. "The trauma system has been demonstrated to save lives. We suggest that an important piece of this mortality benefit may be the explicit requirement for uniform staffing and resources around the clock. Our findings extend well beyond trauma care, illustrating ways in which the emergency care system as a whole can be redesigned to take better care of the sickest, most vulnerable patients."

In the first study to examine whether trauma patients exhibit the so-called "weekend effect," Carr and his colleagues studied 4,382 trauma patients cared for at the Hospital of the University of Pennsylvania between 2006 and 2008. Thirty four percent arrived on weekends (defined as 6 p.m. Friday until 6 a.m. Monday), and 23 percent arrived at night (midnight to 6 a.m.). The researchers found that trauma patients presenting on nights and weekends were no more likely to die than those who arrived at the hospital during weekdays.

These findings held for both blunt traumas (car crashes, head injuries or beatings) and penetrating traumas (most often gunshot and knife wounds). In fact, patients who suffered blunt trauma injuries were less likely to die if they presented at night. Among other outcomes studied - time patients spent on ventilators, length of stay in intensive care units, and overall hospital length of stay - the findings showed that trauma patients who presented on nights and weekends may have fared slightly better than those who came to the hospital on weekdays.

"The take home point here is that among trauma patients, we don't see

the troubling variability in outcomes based on time of presentation that occurs with other time-sensitive conditions," says the study's senior author, Patrick M. Reilly, MD, a professor of Surgery and vice-chief of the division of Traumatology and Surgical Critical Care. "No one plans to be injured, have a heart attack, a cardiac arrest, or a stroke. But when it happens, we owe it to them to provide a system of care that is ready 24 hours a day, 7 days a week, 365 days a year."

Next, the authors plan to expand their research to a larger study of trauma outcomes at hospitals across the state of Pennsylvania and throughout the nation to learn more about how the system's structure may benefit patients during off-hours.

Provided by University of Pennsylvania School of Medicine

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