
Administration of Emergency Medicine

DOES A CATEGORY II TRAUMA ACTIVATION WARRANT THE INITIAL PRESENCE OF AN ATTENDING TRAUMA SURGEON?

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□ Abstract—Background: Previous studies have examined the impact of the immediate presence of attending trauma surgeons on category I trauma alert activation outcomes. **Study Objectives:** This study sought to determine if the initial presence of an attending surgeon influences category II trauma activation outcomes. **Methods:** This 2-year retrospective review of category II alert activations involved a trauma database query to identify patients and extract pertinent variables. **Results:** The attending and non-attending groups were comprised of 2192 (67.6%) and 1051 (32.4%) patients, respectively. There was no significant difference in gender, age, emergency department (ED) duration, Intensive Care Unit (ICU) duration, ED disposition, or ICU admission between groups. No significant differences in outcomes, including patient mortality, complication rates, length of stay, and Injury Severity Score, were calculated between groups. **Conclusion:** These results lend strength to our category II trauma alert activation criteria and suggest that non-critically injured patients in need of trauma care are receiving appropriate treatment, regardless of who performs the initial evaluation. Comparable successful outcomes support the contention that the mandatory initial presence of an attending trauma surgeon is not necessary for category II activations. Initial evaluation may be performed by an emergency physician alone or by a non-attending surgeon (senior surgical resident or fellow) in conjunction with an emergency physician. Management of category II trauma alert activations should be determined by individual institutions after a thorough evaluation of resources and outcomes. © 2010 Elsevier Inc.

□ Keywords—emergency physician; trauma surgeon; trauma center; category II trauma alert; outcome

INTRODUCTION

Initial involvement of surgeons in the management of injured patients is the foundation of trauma care (1). The 2006 updated manual by the American College of Surgeons' Committee on Trauma (ACS-COT) entitled, *Resources for Optimal Care of the Injured Patient*, establishes criteria used to verify trauma centers as Level I, II, or III and is based upon each institution's available resources (2). For example, Level I and II verification require in-house, 24-h per day availability of a general surgeon for major resuscitations (2). Although the ACS-COT emphasizes that the most direct resource for providing such care is the attending trauma surgeon, the surgeon's immediate presence may be fulfilled by a senior level, post-graduate year (PGY) 4 or 5 surgical resident (2). Surgeon presence in the emergency department (ED) is expected upon patient arrival, with a maximum acceptable response time of 15 min for Level I and II trauma centers (2). Furthermore, the institution must demonstrate that the surgeon's presence is in compliance at least 80% of the time (2).

Less stringent guidelines are mandated for category II trauma activations, with the ACS-COT requiring participation of an attending surgeon, but not specifying the

degree or timeliness of participation (2). Instead, the ACS-COT permits each individual trauma program to establish a specific protocol and then mandates adherence to the institutional-generated protocol (2). According to the protocol developed at our urban, Level I trauma center, the attending trauma surgeon evaluates category II trauma activations within 4 h of patient presentation to the ED. Before patient evaluation by the attending trauma surgeon, patients may be managed by a senior surgical resident or trauma fellow.

Although recent studies have explored whether or not outcomes are improved when an attending surgeon is present immediately vs. the presence of senior level surgical residents in category I activations, we are not aware of any previous study specifically investigating this question in category II activations (1,3–8). Such an examination may assist trauma programs in weighing the level of optimal care against mobilizing system-constrained resources. The purpose of this study was to determine if the initial presence of an attending trauma surgeon influences outcomes of category II trauma activations at our trauma center. Initial presence was defined as patient evaluation within the first 30 min of category II trauma activation. To accomplish this goal, a retrospective review of all the category II trauma activations in a 2-year time period was conducted to examine outcomes based on the initial presence of an attending trauma surgeon vs. that of a non-attending trauma surgeon (PGY4, PGY5, or fellow).

MATERIALS AND METHODS

Trauma Program and Trauma Alert Activation Protocol

This study was conducted at an urban regional trauma center with Level I verification by the American College of Surgery and certification by the Joint Commission on Accreditation of Healthcare Organizations. This tertiary care referral facility receives over 64,000 visits to the ED annually, of whom approximately 3000 injured patients are admitted. The trauma center also has active air transport capabilities through a regional air transport agency. The 50-bed ED is comprised of a two-bed trauma suite, three dedicated rooms for cardiac resuscitation, and 45 medical/surgical beds with telemetry. The faculty includes six full-time American Board of Surgery-certified general surgeons with added qualifications in trauma and surgical critical care. The ED is staffed 24 h per day with American Board of Emergency Medicine-certified or American Board of Osteopathic Emergency Medicine-certified physicians. The trauma center also participates in rotations by emergency medicine and general surgery

residency programs accredited by the Accreditation Council for Graduate Medical Education or the American Osteopathic Association. Accredited fellowship positions in trauma emergency surgery and orthopedic trauma also are offered, with two positions per program each year.

All trauma patients are triaged based on a tiered protocol by the attending emergency physician according to Emergency Medicine Services (EMS) field assessment or patient condition upon arrival. The criteria for category II trauma alert activations established by our institution are presented in Table 1. All trauma alert activations are initiated by the attending emergency physician who either assesses the history and clinical information obtained by EMS personnel while en route to the hospital or the patient's condition if not being transported to the hospital via EMS. The attending emergency physician, who is a member of the trauma team, ultimately assigns all trauma category designations using ACS-COT criteria for category I alert activations and the institutional criteria for category II trauma alert activations. The remaining members of the trauma team (attending trauma surgeon, surgical residents, and trauma fellows) then are notified simultaneously by digital pager and overhead

Table 1. Category II Trauma Alert Activation Criteria Established by Institution

Category II Criteria for Trauma Alert Activation
Blunt trauma arrest
Drowning or near drowning
Blunt abdominal trauma with abdominal pain
Glasgow Coma Scale (GCS) score 9–13 with trauma mechanism
Open proximal long bone fracture
One or more proximal long bone fractures attributed to high-impact energy mechanism
Flail chest not exhibiting Category I symptoms
Degloving or extremity injury with neurovascular compromise
Burns* not exhibiting Category I symptoms
Decreased neurovascular or pulses distal to isolated extremity injury

* Note: Consider transferring patients with burns and concomitant trauma in which the burn injury poses the greatest risk of morbidity and mortality. If the trauma poses the greater immediate risk, the patient should be stabilized in the trauma center before being transferred to a burn center. Physician judgment is warranted. Burn injuries that should be transferred to a neighboring burn center include:

1. Partial thickness burns > 10% total body surface area (TBSA).
2. Burns to face, hands, feet, genitalia, perineum, or joints.
3. Third-degree burns > 5% TBSA.
4. Electrical burns (including lightning injury, excluding flash burns).
5. Chemical burns.
6. Inhalation injury.
7. Burn injury in patient with pre-existing medical disorders that could complicate management.
8. Burn injury in patient requiring special social, emotional, or long-term rehabilitation.

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