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## A team approach to effectively discharge trauma patients



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### ABSTRACT

**Background:** Trauma patients represent a high-volume and high-acuity population. This makes discharge planning difficult. Discharged by noon is a metric shown to correlate with hospital throughput. Improvements in efficiency will be needed to improve resource utilization and increase discharge by noon rate. This study aimed to evaluate the impact of a standardized discharge team on length of stay and discharge by noon.

**Materials and methods:** A university level I trauma center implemented a discharge team composed of a trauma attending and an advanced practice provider. This team is tasked with evaluating patients on the discharge list daily. This allowed patients ready for discharge to be evaluated and discharged before noon. A retrospective review was performed to analyze discharge by noon rates before and after implementation of the discharge team.

**Results:** A total of 3053 patients were discharged before the implementation of the discharge team and 3801 after. Discharges by noon increased from 25.5% to 51.2% in the post. For patients with an injury severity score >15, this same improvement was seen, 22.5% to 51.9%. Similar improvements were seen when controlling for final discharge disposition and primary payer status.

**Conclusions:** By establishing a separate discharge team, large improvements can be seen in the discharge by noon rate. These improvements were maintained when controlling for injury severity score, final discharge disposition, and insurance status. Significant savings are possible in both charges to the patient and direct costs to the facility. The utilization of a discharge team should be considered at similar facilities.

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## Background

Changes in healthcare reimbursement coupled with increased demands for access are stressing the healthcare system.<sup>1-3</sup> Trauma patients pose a significant strain on the healthcare

system because of the complex nature of their injuries and high demands on the system.<sup>4</sup> Trauma teams are often a high-census and high-acuity service with high turnover. In addition, trauma services face a disproportionate percentage of patients discharged to other facilities<sup>5</sup> or discharged home

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with the need for home health care.<sup>6</sup> These conditions make the early and efficient discharge of trauma patients difficult. As hospital systems look to increase throughput, a concomitant increase in efficiency is required to decrease length of stay.<sup>7,8</sup> Reducing patient length of stay by effective discharge strategies can play a significant role.<sup>9,10</sup>

Rural trauma systems face additional challenges in managing system resources. Historically, rural centers have seen a higher percentage of the uninsured and higher poverty rates.<sup>11</sup> These patients are less likely to have the resources available for post injury rehabilitation. High transfer rates throughout a rural trauma system place most of the financial and discharge burden on the regional centers.<sup>4,12</sup> Significant proportions of patients are transported far from home making discharge planning more difficult.<sup>13</sup>

The John Michael Moore Trauma Center is a university-based, ACS-verified level I trauma center, located in rural West Virginia. In 2010, because of a system-wide rise in hospital census, and no increase in available hospital bed space, an initiative was started to increase hospital discharges by noon across the health system. This initiative was designed to decrease length of stay and increase throughput. Late afternoon discharges are believed to lead to decreased efficiency and decreased available bed space.<sup>14</sup> In addition, emergency room boarding has been shown to decrease if a discharge by noon goal can be achieved.<sup>15</sup>

As the tertiary care center to a large rural population, the hospital administration emphasizes a system-wide policy of accepting all transfer requests. Trauma transfers are frequent, representing 45% of trauma admissions. No trauma patients' transfer is ever delayed because of hospital census. Although this benefits the trauma patient, it places strain on the system to provide overflow bed space and staffing. In response to these challenges, a separate discharge team was established to support the trauma service. This study aimed to evaluate the impact a separate discharge team had on hospital length of stay and discharge by noon rate.

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## Materials and methods

All patients admitted to the trauma service remain as part of one team throughout their hospitalization. Patients admitted to the trauma service are evaluated daily by a multidisciplinary team composed of a trauma attending, residents, advanced practice providers, pharmacists, nutritionists, and care managers. They are evaluated during traditional surgical rounds in the morning lead by the trauma attending of the week. The residents and advanced practice providers on the trauma team evaluate patients again in the afternoon. Coordination between the trauma team and care management is established by daily meetings after morning rounds. A separate back-up attending is on call and available to assist the primary rounding team as needed.

To meet hospital administration goals and to increase the discharge by noon rate, a separate discharge team was established by the trauma service. This team was created using existing staff. No additional providers were required. The back-up trauma attending is used to lead discharge rounds with an advanced practice provider that was

previously dedicated to the primary trauma team. Once discharge rounds are complete and plans are implemented, the discharge team's advanced practice provider returns to duties with the primary trauma team.

Any patient identified on rounds that may be ready for discharge the next morning is placed on the discharge team list. The advanced practice provider assigned to the discharge team follows standardized protocols and prepares discharge instructions, prescriptions, and follow-up when a patient is placed on the discharge list. These protocols were reinforced by the development of a discharge order set within the electronic medical record. In addition, an order was built into the electronic medical record called "intent to discharge." This order alerts physical and occupational therapy, nursing, pharmacy, and care management that the physician team feels the patient will be ready for discharge by the next morning. The therapists are able to ensure those patients going home are able to perform all transfers safely and are mobile enough for self-care. This also allows time for the patients to receive any additional education by nursing. The discharge pharmacy is also alerted and may prepare prescriptions for patients. The care managers are alerted and can finalize transportation arrangements, home anticoagulation, medical equipment needs, and insurance authorizations for facilities and home health agencies. The "intent to discharge" order also alerts nursing to assist with contacting patient families. The families are updated on the patient's plan of care and plan for discharge. For home discharges, the family members are also asked to be present at the hospital by 10:00 AM the next morning to provide transportation.

Discharges are confirmed at morning report, allowing the trauma attending of the week to offer insight on any patients on the discharge list. The discharge team then rounds on these patients independent of and simultaneous to the primary trauma team. This allows the primary trauma attending to lead rounds on all other patients expected to remain as an inpatient. The discharge team evaluates each patient and his or her discharge plans. This provides an opportunity for a new attending to review the patients' problem list and ensure all injuries are adequately addressed. The advanced practice provider on the discharge team then discharges patients deemed appropriate. By evaluating these patients independent of the full trauma team census, they are seen much earlier in the morning than would otherwise be possible. This facilitates early morning discharges and departures before noon. If any patient is deemed not ready for discharge, that finding is communicated back to the daily rounding team, and the plan of care established between both groups, with the main trauma team responsible for the plan of care.

With institutional review board approval, a retrospective review of the trauma database at a university level I trauma center was performed. First, the trauma database was queried for patients admitted during the study period. Records were reviewed for 2 years before (2008-2009), and 2 years after (2011-2012), implementation of the discharge team. No patients were included during 2010 when the discharge team was implemented. Patients included in the review included all patients admitted to the trauma service who were aged >18 years. Patients were excluded if aged <18 years, those that left against medical advice, and those patients that died as an inpatient.

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