

Backboards For Trauma Patients: How Long?

EMS is very good about immobilizing the spine in trauma patients prior to transporting them to the Emergency Department. Healthcare personnel in the ED are not as good about getting people off of those rigid boards.

As always, it boils down to a risk and benefit assessment. What is the risk of keeping someone on a board, especially if they may have a spine injury? There is a well-known downside to spine immobilization: skin breakdown, which can occur in as little as 2 hours. Less appreciated is the fact that it is very uncomfortable lying on one's back on any type of board, be it a spine board or even a simple plastic slider board.

What is the risk to the spine if it is indeed injured?

In a cooperative patient, essentially zero. Think about it this way: **what are spine-injured patients placed on once they are admitted to the hospital? A regular bed with a standard hospital mattress!** They are kept on logroll precautions until they have an operative procedure or receive a brace.

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TRAUMA CALENDAR OF EVENTS

ORTHOPEDIC TRAUMA ASSOCIATION ANNUAL TRAUMA UPDATE

LOCATION: HILTON WALT DISNEY WORLD, LAKE BUENA VISTA, FL

DATE: MAY 1-3, 2014

EUROPEAN CONGRESS OF TRAUMA & EMERGENCY SURGERY

LOCATION: FRANKFURT, GERMANY

DATE: MAY 24-27, 2014

Bottom line: All patients should be moved off the EMS spine board onto the ED cart unless they are being transferred to another hospital within an hour or less. The ED cart should have a regular mattress, but the patient must be cooperative. If they cannot or will not cooperate, and the probability of spine injury is high, they may need to be chemically restrained. A plastic slider board may be placed under the patient when they are ready to go to diagnostic studies, and should be removed immediately when they are complete. No board of any kind should ever be left under a patient for more than 2 hours.

EMS Handoff: The Problem

Handoffs occur in trauma care all the time. **EMS** hands the patient off to the trauma team. **ED physicians** hand off to each other at end of shift. They also hand off patients to the inpatient trauma service. **Residents** on the trauma service hand off to other residents at the end of their call shift. **Attending surgeons** hand off to each other as they change service or a call night ends. The same process also occurs with many of the other disciplines involved in patient care as well.

Every one of these handoffs is a potential problem. Our business is incredibly complicated, and given that dozens of details on dozens of patients

need to be passed on, the opportunity for error is always present. And the fact that resident work hours are becoming more and more limited increases the need for handoffs and the number of potential errors.

Lets look at some data on patient information transfer at the first handoff point, EMS to trauma team. Some literature has suggested that there are 16 specific prehospital data points that affect patient outcome and must be included in the EMS report. How good are we at making sure this happens?

An observational study was carried out at a US Level I trauma center with video recording capabilities in the resuscitation room. Video was reviewed to document the “transmission” part of the EMS report. Trauma chart documentation was also reviewed to see if the “reception” half of the process by the trauma team occurred as well.

A total of 96 handoffs were reviewed over a one year period. The maximum number of elements in the study was 1536 (96 patients x 16 data elements). The total number “transmitted” was 473, but only 329 of those were “received.” This is not quite as bad as it seems, since 483 points were judged as not applicable by the reviewers. **However, this left 580 that were applicable but were not mentioned by EMS.** Of the 16 key elements, the median number transmitted was 5, with a range of 1-9.

This sounds bad. However, the EMS professionals and the physicians have somewhat different objectives. EMS desperately wants to share what they know about the scene and the patient. The trauma team wants to start the evaluation process using their own eyes and hands. What to do?

Bottom line: EMS to trauma team handoffs are a problem for many hospitals. EMS has a lot of valuable information, and the trauma team wants to keep the patient alive. They are both immersed in their own world, working to do what they think is best for the patient. Unfortunately, they could do better if the just worked together a bit more.

Reference: Information loss in emergency medical services handover of trauma patients. Prehosp Emerg Care 13:280-285, 2009.

EMS Handoff: A Possible Solution

The previous article reviewed some potential problems with handoffs between EMS and the trauma team. It’s a problem at many hospitals. **So what to do?**

Let’s learn from our experience in the OR. Best practice in the operating room mandates a specific time out process that involves everyone in the OR. Each participant in the operation has to stop, identify the patient, state what the proposed procedure and location is, verify that the site is marked properly, and that they have carried out their own specific responsibilities (e.g. infused the antibiotic).



Some trauma centers have initiated a similar process for their trauma team as well. Here’s how it works:

- The patient is rolled into the resuscitation room by EMS personnel, but remains on the stretcher.
- Any urgent cares continue, such as ventilation.
- The trauma team leader is identified and the EMS lead gives a brief report while everyone in the room listens. The report consists of only mechanism, all identified injuries, vital signs (including pupils and GCS), any treatments provided. This should take no more than 30 seconds.
- An opportunity for questions to be asked and answered is presented
- The patient is moved onto the hospital bed and evaluation and treatment proceed as usual.
- EMS personnel provide any additional information to the scribe, and may be available to answer any additional questions for a brief period of time.

Bottom line: This is an excellent way to improve the relationship between prehospital and trauma team while improving patient care. It should help increase the amount of clinically relevant information exchanged between care providers. Obviously, there will be certain cases where such a clean process is not possible (e.g. CPR in progress). I recommend that all trauma programs consider implementing this “Trauma Activation Time Out For EMS” concept.

Making Aeromedical Transport Safer

There are about 840 EMS helicopters operating nationwide. The fatal accident rate has doubled from the mid-90’s to the growth spurt seen in the earlier part of this decade. Since late 2007, 57 crew members and patients have died in these helicopter crashes. According to the FAA, the most frequent causes of these crashes were controlled flight into terrain, inadvertent flight into instrument conditions, and disorientation during night flight.

The FAA implemented new rules effective April 22 in an attempt to improve safety. These changes would include:

- Installing a ground proximity warning system in the aircraft
- Stricter pilot flight time limitations
- Tightening the restrictions that limit proximity to bad weather. Currently, pilots must stay half a mile away from clouds during the daytime and one mile away at night.
- Boosting bad weather training requirements for pilots so they are better equipped to escape from bad weather
- Installing flight data recorders. New, lightweight models need to be developed for helicopters first, though.

It looks like this is a win-win proposition. Lawmakers, families of crash victims and the aeromedical industry appear to be on board with these changes. Yes, it will require extra training and equipment, but look at it as another item in our patient safety checklist.

Trauma Patients Transported By Police??

When I was at Penn 25 years ago, I was fascinated to see that police officers were allowed to transport penetrating trauma patients to the hospital. They had no medical training and no specific equipment. They basically tossed the patient into the back seat, drove as fast as possible to a trauma center, and dropped them off. Then they (hopefully) hosed down the inside of the squad car.

Granted, it was fast. **But did it benefit the patient?** The group now at Penn decided to look at this to see if there was some benefit (survival) to this practice. They retrospectively looked at 5 years of data in the mid-2000’s, thus comparing the results of police transport with reasonably state of the art EMS transport.

They found over 2100 penetrating injury transports during this time frame (!), and roughly a quarter of those (27%) were transported by police. About 71% were gunshots vs 29% stabs. They found the following interesting information:

- The police transported more badly injured patients (ISS=14) than EMS (ISS=10)
- About 21% of police transports died, compared to 15% for EMS
- **But when mortality was corrected for the higher ISS transported by police, it was equivalent for the two modes of transport**

Although they did not show a survival benefit to this practice, there was certainly no harm done. And in busy urban environments, such a policy could offload some of the workload from busy EMS services.

Bottom line: Certainly this is not a perfect paper. But it does add more fuel to the “stay and play” vs “scoop and run” debate. It seems to lend credence to the concept that, in the field, less is better in penetrating trauma. What really saves these patients is definitive control of bleeding, which neither police nor paramedics can provide. Therefore, whoever gets the patient to the trauma center in the least time wins. And so does the patient.

Reference: Injury-adjusted mortality of patients transported by police following penetrating trauma. Acad Emerg Med 18(1):32-37, 2011.

Patients Evaluated But Not Transported By EMS

Injured patients transported to the ED are just the tip of the iceberg. There are some patients who are evaluated by EMS, either at the scene or in their home, but never transported. These patients do not appear in any trauma registry and little information is known about how they do after their evaluation.

Stanford University reviewed county data and found 5,865 patients out of 69,000 who were evaluated by EMS but not transported (3 counties, 3 years of data). Over a quarter (29%) presented to an ED later and 92 were admitted (2% of the total). By linking available vital statistics data, at least 7 were found to have died.

Bottom line: Patients who are evaluated by EMS but ultimately not transported to a hospital may have unsuspected problems. The mortality is very low (0.14%) but these may represent preventable deaths. It is not practical to force everyone to go to the ED. However, it should be cost-effective to at least make a followup call the next day on these select patients to see if they should be urged to get further evaluation in the ED.

Reference: The forgotten trauma patient: outcomes for injured patients evaluated by EMS but not transported. AAST 2011 Annual Meeting, Oral Paper 46. (presented but never published, hmmm.)

The Second IV For Trauma Patients: Really Necessary?

One of the critical maneuvers that EMS providers perform is establishing initial vascular access. This IV is important for administering medications and for initiating volume resuscitation in trauma patients. Prehospital Trauma Life Support guidelines state that **every trauma patient should receive two large bore IV lines. But is this really necessary?**

The **upside** of having two IVs in the field is that the EMS provider can give lots of volume. However, a growing

body of literature tells us that pushing systolic blood pressure up to "normal" levels in people (or animals) with an uncontrolled source of bleeding can increase mortality and hasten coagulopathy.

The **downside** of placing two lines is that it is challenging in a moving rig, sterility is difficult to maintain, and the chance of a needlestick exposure is doubled. **So is it worth it?**

A group at UMDNJ New Brunswick did a retrospective review of 320 trauma patients they received over a one year period who had IV lines established in the field. They found that, as expected, **patients with two IVs received more fluid** (average 348ml) before arriving at the hospital. There was no increase in systolic blood pressure, but there was a significant increase in diastolic pressure with two lines. The reason for this odd finding is not clear. There was **no difference in the ultimate ISS calculated, or in mortality or readmission.**

Bottom line: This study is limited by its design. However, it implies that the second field IV is not very useful. The amount of extra fluid infused was relatively small, not nearly enough to trigger additional bleeding or coagulopathy. So if another IV does not deliver significant additional fluid and could be harmful even if it did, it's probably not useful. Prehospital standards organizations should critically look at this old dogma to see if it should be modified.

Reference: Study of placing a second intravenous line in trauma. Prehospital Emerg Care 15:208-213, 2011.



			
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