Trauma Patients Staying Too Long In Your ED?

One of the long-held beliefs in trauma care relates to the so-called “golden hour.” Patients who receive definitive care promptly do better, we are told. In most trauma centers, the bulk of this early care takes place in the emergency department. However, for a variety of reasons, throughput in the ED can be slow. Could extended periods of time spent in the ED after patient arrival have an impact on survival?

Wake Forest looked at their experience with nearly 4,000 trauma activation patients who were not taken to the OR immediately and who stayed in the ED for up to 5 hours. They looked at the impact of ED dwell time on in-hospital mortality, length of stay and ventilator days.

Overall mortality was 7%, and the average time in the ED was 3 hours and 15 minutes. The investigators set a reasonable but arbitrary threshold of 2 hours to try to get trauma activation patients out of the ED. When they looked at their numbers, they found that mortality increased (7.8% vs 4.3%) and that hospital and ICU lengths of stay were longer in the longer ED stay group. Hospital mortality increased with each hour spent in the ED, and 8.3% of patients staying between 4 and 5 hours dying. ED length of stay was an independent predictor for mortality even after correcting for ISS, RTS and age. The most common cause of death was late complications from infection.

Why is this happening? Patients staying longer in the ED between 2 and 5 hours were more badly injured but not more physiologically abnormal. This suggests that diagnostic studies or consultations were being performed. The authors speculated that the knowledge, experience and protocols used in the inpatient trauma unit were not in place in the ED, contributing to this effect.

Bottom line: This is an interesting retrospective study. It reflects the experience of only one hospital and the results could reflect specific issues found only at Wake Forest. However, shorter ED times are generally better for other hospitals.
reasons as well (throughput, patient satisfaction, etc). I would encourage all trauma centers to examine the flow and delivery of care for major trauma patients in the ED and to attempt to streamline those processes so the patients can move on to the inpatient trauma areas or ICU as efficiently as possible.


Removing The Backboard

Backboard usage by EMS is an important part of patient safety. It keeps the patient from injuring themselves or others within the confines of the ambulance or helicopter. But too much of anything is bad, and this is true of backboards as well.

As little as 2 hours on a board can lead to skin breakdown. The most common reason that patients are not taken off boards sooner is concern for spine fractures. But the reality is that the board is not necessary once the patient arrives in the ED. If the spine is broken and they are admitted as an inpatient, they will be on log roll precautions on a regular hospital bed and mattress!

It is recommended that hospitals develop a policy for getting all patients off backboards as quickly as possible. The most convenient time is during the logroll to examine the back during the ATLS evaluation.

Note: do not do a rectal exam during the logroll because this will cause the patient to wiggle more than you would like while they are up on their side. The goal should be to get the backboard removed within 20 minutes of patient arrival. It is recommended that a slide board be placed under them if they will be visiting diagnostic areas like CT scan. As soon as all studies are finished, pull the slide board as this can cause skin problems as well. Ideally, board removal should be documented, and this whole process can become a PI project.

Using The Slide Board In The ED

Many hospitals use slide boards to facilitate patient movement on and off the ED cart when undergoing imaging studies. How should we manage the use of this device?

There is no difference between a backboard and a slide board to the patient. It’s hard and uncomfortable to lie on for any period of time, and can cause soft tissue injury. To trauma professionals in the ED it is thinner, less bulky, easier to manipulate, and does not interfere with x-rays as much. We tend to pay less attention to it than a backboard. Although it does not immobilize the spine as well as a backboard does, the difference is not clinically significant (in a cooperative patient). Remember, if your patient actually has a spine fracture, they will be placed on logroll precautions on a soft mattress only somewhere in your hospital! No stiff boards of any kind!

Slide board management tips:

- Slide boards are for blunt trauma only! Patients with penetrating injury may need an upright chest xray in the ED and the board won’t flex enough.
- Insert the slide board in any patient who will be getting several diagnostic studies. For trauma activation patients, this can occur as you roll them off the backboard.
- As soon as diagnostic studies are done, remove the slide board
- If there are unforeseen delays, remove the slide board and reinsert when ready to move
- Remember that the soft tissue timer is counting down as soon as the patient is placed on a backboard or slide board
- Plan an efficient road trip through diagnostic studies for your patient. This allows you to minimize time on the board.
- Repeated logrolls onto and off of the slide board are discouraged. Every roll is an opportunity for mishap.
Where is YOUR Personal Protective Equipment (PPE)?

Standard or universal precautions are essential in trauma. They serve two purposes: keeping you safe from exposure to body fluids, and keeping you from contaminating any open wounds. Unfortunately, they are not used as “universally” as they should be.

Here are some typical excuses for not wearing them:

- I don’t have time to put them on
- They’re so hot!
- It’s just a kid, I have nothing to worry about

All wrong! It takes less than 30 seconds to put them on. And yes, they may be a little warm, but if you have time to notice, then your trauma activations are taking too long. Anyone, including children, may have diseases you don’t want to share.

There are two major reasons that are legitimate and must be addressed:

1. They are not conveniently placed. The deeper in the trauma room they are, the less likely anyone is to wear them (see photo). Place them just outside the door to your trauma bay in plain sight.

2. Their use is not enforced. Assign specific people the role of PPE police. Emergency physicians and surgeons are optimal, but the charge nurse or others in authority positions

Develop a culture where the expectation is that everyone who enters the trauma bay, no matter what their rank, must be wearing their protective gear. Your philosophy should be “it’s not just a good idea, it’s the law.”

Extubation in the Emergency Department

Many patients are intubated in the emergency department who need brief control of their airway or behavior. In some cases, the condition requiring intubation resolves while they are still in the department. Most of the time these patients are admitted, typically to an ICU bed, for extubation. This is expensive and uses valuable resources. **Is it possible to safely extubate these patients and possibly send them home?**

Maryland Shock Trauma and Mount Sinai Medical Center looked at their experience in extubating selected patients in the ED. They looked at a series of 50 patients who were intubated for combativeness, sedation, or seizures. A specific protocol was followed to gauge whether or not extubation should be attempted.

None of the patients who were extubated per protocol required unplanned reintubation. One patient underwent planned reintubation when taken to the OR for an orthopedic procedure. 16% of patients were able to be discharged home from the ED.

**Bottom line: A subset of patients who are intubated in the emergency department can be extubated once the inciting factor has resolved. These factors include sedation for painful procedures and combativeness. Following this protocol can reduce admission rates and reduce the use of scarce intensive care unit resources.**

To download a copy of the ED extubation protocol, enter this address in your web browser or scan this QR code using your smart phone:
ED Extubation Protocol

**Inclusion**
- Resolution of clinical issue requiring intubation
- Sat > 95% on FiO2 ≤ 40%, PEEP ≤ 5 cm H₂O
- RR < 30, SBP > 100, HR < 130
- Patient not known to be a difficult intubation

**Preparation**
- Turn off sedatives
- Leave opioids on at a low dose (e.g., fentanyl 50 µg/h)
- Allow patient to regain full mental status
- If patient shows signs of discomfort, consider administering more pain medication.
- Patient should be able to understand and respond to commands

**Testing for Readiness**
- Ask patient to raise arm and leave in air for 15 seconds
- Ask patient to raise their head off the bed
- Ask patient to cough, they should be able to generate a strong cough
- Place Patient on Pressure Support at a setting of 5 cm H₂O. Sit patient up to at least 45°. Observe for 15-30 minutes. If Sat < 90%, HR > 140, SBP > 200, severe anxiety, or decreased LOC–discontinue extubation attempt.

**Procedure**
- Have a nebulizer filled with normal saline attached to a mask
- Sit pt up to at least 45°
- Suction ET tube with bronchial suction catheter
- Suction oropharynx with Yankeur suction
- Deflate the ET tube cuff
- Have the patient cough, pull the tube during the cough
- Suction the oropharynx again
- Encourage the patient to keep coughing up any secretions
- Place the nebulizer mask on the patient at 4–6 LPM

**After Extubation**
- Patient should receive close monitoring for at least 60 minutes
- If patient develops respiratory distress, NIV will often be sufficient to avoid reintubation.