

Trauma MedEd

The Better Is The Enemy Of The Good

- From the poem "The Prude Woman" by Voltaire, 1772.

This adage is particularly important in medicine. Every test and treatment we order has an upside (hopefully) that will reveal something or make our patient better. Unfortunately, we tend to ignore the inescapable downsides, which include cost and unanticipated consequences. These consequences are the discomfort, side effects, and dangers that come with any medical intervention. And in some cases, the results of an unneeded test may be in error or show some red herring that leads us on a wild goose chase of other interventions that compound the danger.

Bottom line: All trauma professionals need to think about everything they do to a patient, especially the risks they will inflict and the benefits that might accrue. Consider how it will influence your care. Will anything that is revealed change what you do? If not, you don't need it. And your patient certainly doesn't need the costs and hidden dangers that go along with it.

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TRAUMA CALENDAR OF EVENTS

TRAUMA, CRITICAL CARE & ACUTE CARE SURGERY

LOCATION: CAESAR'S PALACE, LAS VEGAS, NV

DATE: MARCH 31-APRIL 2, 2014

SOCIETY OF TRAUMA NURSES

LOCATION: SHERATON NEW ORLEANS, NEW ORLEANS, LA

DATE: APRIL 2-5, 2014

Nursing: When Is Drain Output Too Bloody?

Trauma surgeons frequently place some type of drain in their patients, whether it be a chest tube, a damage control system, or a bulb suction drain near the pancreas. On occasion, nursing may become concerned with the character of the output, wondering if the patient is bleeding significantly. **How can you tell if the output is too bloody?**

First, most drains are in place to drain serous fluid which may have a little blood in it. Drainage that is mostly bloody is very uncommon from these drains, which are typically placed after orthopedic, spine or abdominal surgery. However, some drains are placed in areas where unexpected bleeding may occur, such as:

- Damage control drain systems - as patients warm up, arterial sources that were not surgically controlled may open up
- Pericardial drains - more common in cardiac surgery, not trauma
- Chest tubes in patients with penetrating trauma

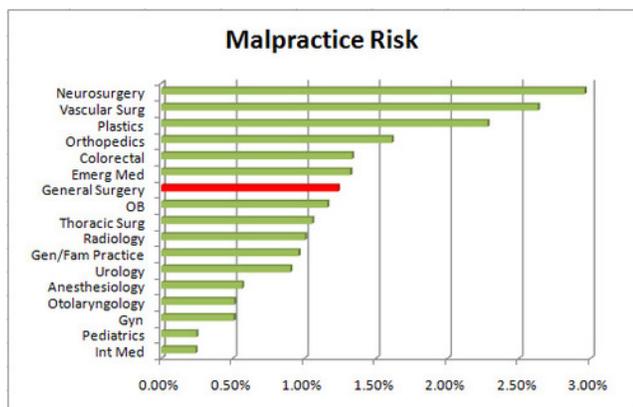
What should you do if you have concerns about your patient's drain output?

- **Familiarize yourself with what kind of drain it is and what it should be draining**

- **Look at the volume of output** - it takes 500cc of pure blood to drop the patient's hemoglobin by about 1 gram. Low outputs are not dangerous, even if it is pure blood.
- **Look at the change in output**- if it is increasing significantly or changes color, call the physician to evaluate.
- **Look at the color of the output** - most drainage ranges from clear to something like cranberry juice and appears to be partially transparent. Look carefully if it appears to be darker or more opaque, and compare it to the blood that you would see in a blood collection tube. Even the darkest drain output usually looks a little watery compared to whole blood. Bright red output needs to be evaluated by a physician.
- **If in doubt, check the fluid's hematocrit.** Whole blood has a hematocrit of 30% or more. Most bloody-looking drain output maxes out at about 5%. If the value is closer to whole blood, have a physician evaluate the patient.

Do Trauma Surgeons Really Get Sued More Often?

This graph shows the incidence of lawsuits for a variety of medical specialties. General surgeons are in the middle of the pack. Although all trauma surgeons are general surgeons, not all general surgeons are trauma surgeons. This means that it is possible that the true lawsuit risk of this small minority of general surgeons is masked.



There has always been a perception that trauma patients sue more often than other patients, and that trauma surgeons get sued more often than surgeons

who do not provide trauma care. In several surveys polling surgical residents, this perceived malpractice risk is an impediment to considering a trauma practice. It is also frequently cited as a reason why established general surgeons do not want to engage in trauma care.

It is difficult to objectively study this area. Data sources are few and far between, and it is often difficult to get denominator information to determine the true incidence of lawsuits against trauma surgeons.

The University of Texas at San Antonio performed a nice study looking at their experience over a 12 year period. They compared the number of malpractice actions brought by patients who were undergoing an elective general surgical procedure, patients who underwent urgent or emergent general surgical procedures, and those who were classified as trauma patients.

They found **that there were only 21 lawsuits served over the 12 year period**, during which over 62,000 operations were performed. Seven were dismissed, 3 were granted summary judgments in favor of the physicians, and one went to trial and was decided in favor of the surgeon. **Only half (10) were decided in favor of the patient.** All were settled, with a total of \$4.7 million in payouts. Legal defense costs were \$1.3 million.

The ratios of lawsuits to operations performed were 3.0/100,000 for elective, 2.3/100,000 for urgent/emergent, and 3.1/100,000 for trauma. **Given the total number of trauma patients evaluated, the ratio was 0.34 lawsuits per 100,000 trauma patients per year.**

Bottom line: Health care is a complicated process, and there are bound to be a few adverse outcomes. The majority of these occur due to reasons that we do not yet fully understand. Lawsuits are rare, and as long as the physicians adhere to the standard of care, they frequently prevail. The idea that trauma surgeons get sued more frequently or more successfully than our non-trauma surgical colleagues is a fallacy that needs to finally be laid to rest.

References:

- Stewart et al. Trauma Surgery Malpractice Risk: Perception vs Reality. *Annals of Surgery* 241(6):969, 2005.

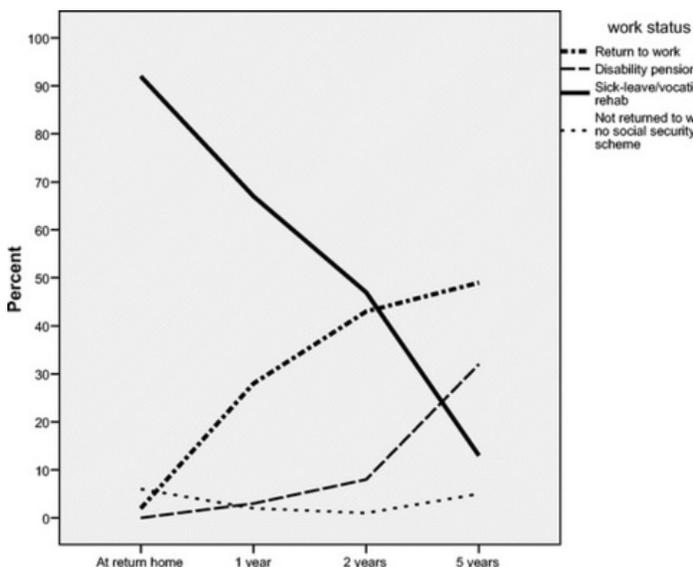
Return To Work After Severe Trauma

One of the most important goals after injury is return to work or school. There are some studies available that look at return to work/school status as a function of injury severity, demographic and insurance status. However, long-term studies are rare.

A Norwegian group followed a small population of injured patients very closely for five years, looking at the actual trajectory of return. They also tried to determine the specific factors that predicted return to work. The initial group numbered 101 people, but slowly decreased to 75 due to dropouts, nonresponders, and one patient who retired while receiving disability benefits.

The average age was 39 and ISS was 29. About 60% had a lower level of education and blue collar jobs. There were 28 patients with severe head injury, 12 with moderate head injury, 18 spinal cord injuries and 3 amputees among the group.

At the end of 5 years, only 49% had returned to work (see chart). 23% were on full disability and 9% on partial disability. Of greatest interest, there was only a small increase in return to work after 2 years. The best predictors of return to work were higher education level, good physical health and function (no surprise), and type of coping strategy. Time spent in rehab was also a factor.



Bottom line: Rehab that aims toward return to work is a major factor in getting better after major injury. However, an additional focus on coping and other psychological factors is important. Most people who will be capable of returning to work or school will do so by the two year mark.

Reference: Returning to work after severe multiple injuries: multidimensional functioning and the trajectory from injury to work at 5 years. J Trauma 71(2):425-434, 2011.

Drug Use And Automobile Crashes

All trauma professionals are keenly aware of how often alcohol is involved in automobile crashes. Something you may not know is that **one third of drug tests for other substances are positive in drivers involved in car crashes!**

There has been a 5 percent increase in the number of positive drug screens in drivers over the past 4 years. The drugs range from hallucinogens to prescription pain medications.

Seventeen states have enacted legislation making it illegal to drive while on various types of legal and illegal drugs. However, these laws are difficult to enforce because:

- They are more difficult to detect, both by law enforcement at the scene and in the hospital
- We don't know a lot about the impact of these drugs on driving performance
- A positive drug screen does not tell us when the substance was taken and if it is at a significant level

Drug screens are typically obtained in the ED in seriously injured drivers. It's a good idea to order one in any patient with a significant head injury. This allows the clinician to guess (and it's just a guess) that the medications may be impairing the mental status exam. Any patients who have a positive screen should have a documented chemical dependency evaluation and be provided with referral information to get further help.

Reference: National Highway Traffic Safety Administration

Spine Immobilization In Penetrating Trauma: More Harm Than Good?

The EMS standard of care for blunt trauma patients has been to fully immobilize the spine before transporting to an emergency department. This is such a common practice that it is frequently applied to victims of penetrating trauma prior to transport.

A study in the Journal of Trauma calls this practice in question, and suggests that it **may increase mortality!** The authors reviewed data in the National Trauma Data Bank, looking at information on penetrating trauma patients. They found that approximately **4% of these patients underwent spine immobilization.**

Review of mortality statistics found that the mortality in non-immobilized (7%) doubled to 14% in the immobilized group!

The authors also found that medics would have to fail to immobilize over 1000 patients to harm one who really needed it, but to fully immobilize 66 patients who didn't need it to contribute to 1 death.

Although this type of study can't definitely show why immobilization in these patients is bad, it can be teased out by looking at related research. Even the relatively short delays caused by applying collars and back boards can lead to enough of a delay to definitive care in penetrating trauma patients that it could be deadly. The assumption in all of these patients is that they are bleeding to death until proven otherwise.

A number of studies have suggested that a "limited scene intervention" to prehospital care is best. The assumption is that the most effective treatment can only be delivered at a trauma center, so rapid transport with attention to airway, breathing and circulation is the best practice.

While interesting, some real-life common sense should be applied by all medics who treat these types of patients. The reality is that it is nearly impossible to destabilize the spine with a knife, so all stab victims can be transported without a thought to spine immobilization. Gunshots can damage the spine and spinal cord, so if there is any doubt that the bullet passed nearby, at least

simple precautions should be taken to minimize spine movement.

Reference: Spine Immobilization in Penetrating Trauma: More Harm Than Good? Haut et al, Johns Hopkins. J Trauma 68(1): 115-121, 2010.

A Practical Checklist For Predicting PTSD

PTSD can cause significant morbidity after trauma. Most centers manage this problem reactively, when the patient exhibits obvious symptoms in the hospital or after discharge. Wouldn't it make more sense to screen for it routinely? Is there a way to figure out which patients are at higher risk?

The University of Pittsburgh prospectively screened 1,386 injured patients presenting to their followup clinic using the PTSD Checklist - Civilian (PCL-C) instrument. A score of ≥ 35 has a sensitivity of 85% and was considered a positive result.

The authors found that more than 25% of their outpatient clinic patients met the threshold. **The most common mechanism was assault, both blunt and penetrating. Younger age (<55), female gender and motor vehicle crash were also found to be predictors.**

Bottom line: Consider routine PTSD screening using the PCL-C is self-administered and takes only about 5 minutes to complete. The most reliable way is to send it home with your patient, with instructions to complete it before they see you or their primary physician in the outpatient clinic.

To Download PCL-C:



Scan the QR code, or enter this URL in your browser:

<http://bitly.com/n6z2Ow>
(case sensitive)
O = the capital letter O



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