

# Trauma Center News



Brigham and Women's Hospital Trauma Burn Center



Volume 15 Issue 1

Spring 2011

## Domestic Violence Expert Addresses Strangulation and Risk for Homicide

The statistics are startling. In Massachusetts, the first half of 2010 saw an average of one death per week from intimate partner violence. And, approximately 25 percent of domestic violence cases nationwide include attempted strangulation—the third most common cause of death in domestic violence cases.

“Strangulation is a red flag,” said Jacquelyn Campbell, PhD, RN, FAAN, Johns Hopkins University School of Nursing. “A woman who is involved in a choking incident with her partner is at an increased risk for intimate partner femicide, or death from domestic violence.”

*“More than 47 percent of women who were killed were seen in the health care system in the year prior to their death,” said Campbell.*

In the summer of 2010, Campbell was invited to speak before the BWH community about ways to recognize and address attempted strangulation. “We need to identify the women who have a history of abuse and then ask about choking,” she said. While “strangulation” is the correct word to describe the form of asphyxia characterized by closure of the blood vessels and air passages of the neck as a result of external pressure on the neck, Campbell’s research has found that victims of intimate partner violence relate better to the word “choking” when talking about their abuse.

Campbell reviewed a list of signs and symptoms that are characteristic of women who have been choked, noting that many abused women have post-traumatic stress disorder which can misrepresent as trouble sleeping or anxiety.

### Other signs of choking incidents include:

- traumatic brain injury (TBI)
- neurological symptoms including memory loss, blacking out, seizures, difficulty concentrating.

### Physical symptoms include:

- voice changes
- swallowing troubles
- swelling of the tongue
- petechiae
- breathing changes

About 20 percent of women who come through emergency departments are in abusive relationships. Though injury from intimate partner violence is not necessarily the reason for their visits, identifying these women while they are in the health care system is crucial.

Passageway launched the campaign to educate BWH physicians, nurses and social workers of the importance to screen for strangulation in October 2009. Since that time, a total of 142 patients have been identified as experiencing strangulation in their intimate relationship and referred to Passageway for consultation. A majority of these patients experienced strangulation within 3 months of the hospital visit (see figure 1). Prior to October 2009, an average of 14 cases of strangulation was documented and referred to Passageway per year.

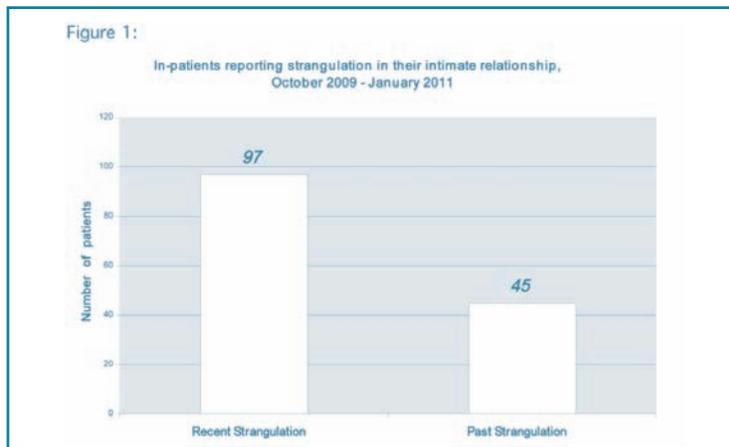
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## Domestic Violence Expert Addresses Strangulation (cont.)

“It’s important for clinicians to learn how to recognize signs of intimate partner violence and to be able to identify those who are most at risk,” said Mardi Chadwick, JD, director of Passageway. “Jackie’s research has shown us what factors are most likely to lead to a homicide, and we encourage everyone to utilize the tools that she and BWH provide.”



Source: Brigham and Women’s Hospital Passageway, 2011

Passageway is a program of the Center for Community Health and Health Equity which provides comprehensive domestic violence advocacy services for Brigham and Women’s Hospital employees and patients.

For more information regarding the many domestic violence intervention services offered at Passageway, please contact Mardi Chadwick at 617-732-8753.

Author: Julie Passo

## Data Coordinators: Not Just Data Entry

The burn and trauma data coordinators play a multifaceted role that may be overly simplified as data entry. Data coordinators belong to the family of data professionals, who typically are responsible for data entry, reporting, and analysis. While trauma data coordinators, also commonly called trauma registrars, share many of the same responsibilities as other data professionals, there are notable differences that set them apart.



Vivian Li, Data Coordinator,  
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That being said, a quick overview of clinical data is in order. Clinical data is collected in many specialties, and each specialty has their own population, programs, rules, and regulations. Many organizations exist for each specialty to help build the framework for a robust database. In the case of the Burn and Trauma service, the population of interest is

trauma patients. The definition of a trauma patient is a patient who sustained a trauma event that resulted in at least one qualifying injury that occurred within a specific timeframe. There are exceptions to this rule, namely when an outside hospital is involved. The inclusion and exclusion criteria for adding a patient to a trauma registry vary from one hospital to another. Case finding poses challenges as well, as patients are not necessarily found only on the Burn and Trauma Service; many patients can be found on other surgical services such as Orthopedics or Neurosurgery. The National Trauma Data Bank provides the framework for which hospitals all over the country can build on.

Data professionals have a choice in the type of data they deal with. Generic data, such as demographics or vital signs, do not require specific knowledge of the data. On the other hand, many data professionals need to have some degree of knowledge about their data in order to maintain its integrity. For example, it is absolutely necessary for trauma data coordinators to understand two commonly used injury scoring scales: Abbreviated Injury Scoring (AIS) and International Code of Diseases (ICD). Trauma data coordinators regularly attend seminars that train them on updated versions of these scoring scales. Trauma data coordinators are responsible for both types of data.

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# Transforming Rib Fracture Care at the Bedside

Rib fractures are a common injury for patients presenting to emergency departments with blunt thoracic trauma. Approximately 10% of these patients require an admission to a trauma center. Using the Medicare Short-term Stay Survey from 2007, nearly 353,000 patients were admitted with a rib fracture diagnosis code. The true incidence of rib fractures is likely higher because bony fractures within the thorax are often under-detected using traditional radiography (Simon et al., 2005). Most often, rib fractures are sustained during falls, traffic-related events involving motor vehicles and pedestrians, or crush events involving high energy loads.

When rib fractures result from major trauma or high energy loads, concurrent injuries are not uncommon. These may be injuries to the heart, lungs, liver or spleen. As a result, patients suffer significant morbidity and mortality. Mortality rates may range from 3-13% (Carrier et al., 2009). Age and the number of rib fractures are the strongest predictors of mortality. Studies have found that mortality rates may increase to as high as 18% in patients over the age of 64 (Winters, 2009). Correspondingly, an increased number of rib fractures resulted in increased morbidity and mortality rates (Flagel, 2005). Immediate complications of bony rib fractures include pneumothorax, hemothorax, pulmonary contusion, and flail chest.

According to Vivian Li, Trauma Data Coordinator at BWH, the *TraumaOne* Registry identified an increasing number of patients admitted to BWH who sustained rib fractures. In a population of 4,600 patients, 11% had rib fractures. Patients most frequently identified in the literature as most at-risk (Those patients over the age of 64 with any number of rib fractures or any patient sustaining three or more rib fractures), were noted to be mostly males with an average Injury Severity Scale (ISS) of 21 and a mean age of 55. The average length of stay for this subset of patients was nine days, in which seven percent died.

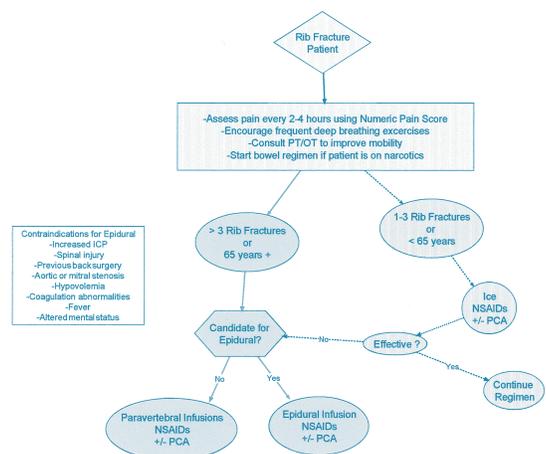
At Brigham and Women's Hospital (BWH), the Burn Trauma Service (BTS) has directed efforts to improve the outcome and reduce variation in the management of patients suffering rib fractures. The BTS team admits these patients to the trauma Intensive Care Unit (ICU) for a minimum of 24 hours to aggressively address the triad of pain, ineffective ventilation, and the retention of secretions that when combined, prove to be more than incapacitating, but life threatening. (See Figure 1) For the purposes of this article, the discussion will be limited to pain management, as many find it to be a crucial determinant in recovery.

A significant obstacle for patients suffering rib fractures is the chest wall pain associated with breathing and moving. This pain and its resultant immobility leads to hypoventilation and delayed pulmonary complications such as atelectasis, pneumonia and respiratory failure (Truitt et al., 2010). Older adults are four times more likely to develop pneumonia compared to younger adults and four times more likely to die from pneumonia than younger adults (Winters, 2009). Proper pain management allows patients to breathe deeply and mobilize more readily. Both of these actions are important in the prevention of the atelectasis which may rapidly lead to pneumonia and respiratory failure.

In recent years, multiple modalities of pain management serve as adjuncts for the surgeon or healthcare provider. The clinical members of the team must have a grounded knowledge of these tools to effectively implement and anticipate current and future pain needs of the patient. These include narcotics, local nerve blocks, paravertebral blocks, epidural analgesia and surgical stabilization. A review of the literature does not yield a wealth of outcomes research to support one method over another. This leads to variation in clinical practice and uncertainty or delays in developing consensus around the approach. At BWH, the interdisciplinary team works closely together to develop consensus around the daily plan of care that includes to writing out daily goals, adherence to the ventilator bundles, along with frequent communication. All members within the interdisciplinary team are encouraged to advocate for the patient based on his/her discipline of expertise. Trauma rounds with the team frequently results in analysis of the current medication management and team members sharing their assessment during different times of day or activities observed with the patient.

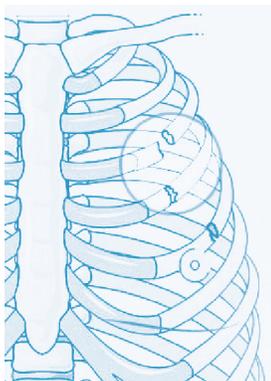
The Eastern Association for the Surgery of Trauma (EAST, 2007), a longstanding and expert resource from the field of trauma surgery, posts a number of detailed clinical practice guidelines (CPG's) that provide readers with an exhaustive review of the evidence. See this link: <http://www.east.org/tpg.asp>. Within its most current guideline for Pain Management from Blunt Thoracic Trauma, epidural analgesia is the recommended modality for pain management in those patients suffering from severe thoracic blunt injury. Epidurals are "associated with less respiratory depression, somnolence and gastrointestinal symptoms than intravenous narcotics" (Simon et al., 2007, p. 1257). This guideline notes that complications from epidural analgesia leading to permanent disability or death are extremely rare. Epidural analgesia is also recommended for patients over 64 years of age because epidural analgesia allows for little to no narcotic use in this population that is very sensitive to narcotics.

## Clinical Practice Guidelines



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## Transforming Rib Fracture Care at the Bedside (cont.)



Source: <http://www.medicinept.com/template/medicine/>

There is a subset of this patients in which epidural analgesia is contraindicated due to level of consciousness, spinal injuries, increased intracranial pressure from head injuries, hypovolemia, or coagulopathy. In these cases, Paravertebral blocks or infusions are recommended. Paravertebral blocks involve administering local anesthetics near the thoracic vertebrae. According to Simon et al. (2007) paravertebral infusion is a good option because it does not require painful palpation of the ribs and some practitioners find it easier to perform than an epidural placement. It can be used on sedated patients because there is little to no risk of spinal cord injury. Since the approach is unilateral, episodes of hypotension are rare. Paravertebral infusion also preserves lower extremity function and neurological exam. Although there is no evidence currently to demonstrate that paravertebral infusions are more or less effective than epidural analgesia, they are a reasonable alternative when epidural analgesia is contraindicated.

Patients with less than three rib fractures or younger patients may not require an epidural or paravertebral infusion, but may benefit from patient-controlled analgesia (PCA). It can also be used as an adjunct therapy in more severe situations. Keep in mind, every patient receiving narcotic analgesia should be placed on a bowel regimen to prevent constipation.

All patients with rib fractures should receive a non-steroidal anti-inflammatory drug (NSAID) as part of their pain management regimen. Although NSAIDs have a weak analgesic effect when used alone, they are a useful adjunct therapy. One advantage, often relied upon in the setting of a patient with multiple co-morbidities, is its lack of cardiovascular and neurologic side effects.

Occasionally, surgeons will perform an open reduction and internal fixation of severe rib fractures causing prolonged intubation or severe refractory pain. Larger studies are needed to evaluate outcomes for such surgery (Nirula et al., 2009). Brigham and Women's Hospital is currently participating in a national trial to determine which cohort of patients derive the most benefit from this procedure.

Once a rib fracture patient's pain is well controlled it is important for staff to encourage deep breathing exercises, coughing and frequent ambulation. These measures are important in preventing the common complication of pneumonia. The interdisciplinary team works together to ensure these things occur. Nurses, physical therapists and occupational therapists assist to improve mobility. Early nutritional support is essential as well, to address the increased metabolic needs during the recovery phase.

In summary, patients experiencing multiple rib fractures are best managed applying a systematic approach with an early emphasis to prevent complications and thereby reduce morbidity and mortality rates. All patients over the age 64 and all patients with three or greater rib fractures should be admitted to the Intensive Care Unit to provide additional vigilance in monitoring pulmonary status and address pain management aggressively from the onset; preferably using epidural analgesia. Effective pain management will allow patients to effectively deep breathe and whenever possible ambulate or at least get out of bed. The interdisciplinary team at Brigham and Women's Hospital continues to work together to improve patient outcomes for this high risk population.

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Special Thank You to **Meaghan Muir**, BWH Medical Library for her immense support.

## Data Coordinators: Not Just Data Entry (cont.)

Another thing that sets data professionals apart is their goal while coding the data. Medical billers are interested in coding for financial accuracy. Clinical data coordinators are trained to code for maximum clinical accuracy. These differences are very important, because a researcher interested in data for a clinical study may be better served by data from a clinical database instead of a billing database. Conversely, an administrator who is concerned about resource management would prefer to use data from a billing database than a clinical one. While different, each dataset has its strengths and weaknesses which should be taken into account when interpreting the results.

In addition to abstracting more than 70 data points per patient, data coordinators can run queries of varying levels of complexity to answer clinical questions. Aggregate level data, such as volume, are reports commonly run for departmental review. More complicated reports, such as a patients diagnosed with intertrochanteric femur fractures that suffered from hypertension and were also between the ages of 30 and 50, can also done be for IRB-approved studies. Since data coordinators are running reports on the data that they abstract, it is a primary objective to make sure data is as exact as possible. This allows the trauma database to be reliable and thus a powerful tool for a diverse group of clinical and non-clinical professionals.

So in short, what makes a trauma data coordinator? Firstly, trauma data coordinators are guided by a standard established by the National Trauma Data Bank to pinpoint patients for the trauma population. They are accountable for a mix of generic and specialized data points. To code correctly for the specialized data points, they undertake seminars dedicated to this specialized data. They also code with clinical accuracy in mind, so that their reports can dependably reflect trends in the trauma population. While data is an extremely powerful tool, it is limited by itself. Numbers do not show the whole picture, and everyone who examines data must keep that in mind. Nevertheless, trauma data coordinators play an important behind-the-scenes role that is more than just data entry.

**Ms. Vivian Li is a data coordinator for the Trauma and Burn Program at Brigham and Women's Hospital. She graduated from Cornell University with Bachelor of Science degree in Policy Analysis and Management.**

**Ms. Li may be reached by phone at 617-525-9477 or by email at [svl1@partners.org](mailto:svl1@partners.org).**

*Author: Vivian Li*

## BWH celebrates 15 consecutive years as Level 1 Trauma Center

**B**righam and Women's Hospital Trauma Center was again verified as a Level 1 Trauma Center for Adults by the Committee on Trauma (COT) of the American College of Surgeons (ACS). This achievement recognizes Brigham and Women's dedication to providing optimal care for injured patients.

The COT Verification/Consultation Program for Hospitals was established by the American College of Surgeons in 1987. It promotes the development of trauma centers in which participants provide not only the hospital resources necessary for trauma care, but also the entire spectrum of care to address the needs of all injured patients. This spectrum encompasses the pre-hospital phase through the rehabilitation process.

***"Our staff is passionate about providing optimal care," stated Yvonne Michaud, BWH Trauma Program Manager.***

At the BWH Trauma Center, trauma is seen as a multidisciplinary specialty with expertise from surgery, nursing, rehabilitation services, psychiatry, nutrition and pharmacy in the care and treatment of the patient.

Under the leadership of Dr. Jonathan D. Gates since its inception in 1995, the BWH Trauma Center has seen its role expand within the hospital and in the community as a leader in the area of trauma care.

**For more information on the BWH Trauma Center, please visit us at:**

**[http://www.brighamandwomens.org/Departments\\_and\\_Services/surgery/services/burntrauma/Default.aspx](http://www.brighamandwomens.org/Departments_and_Services/surgery/services/burntrauma/Default.aspx)**

*Author: Charlene Palmer*

# Trauma Center News



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**Trauma Center News** is published three times per year by the Brigham and Women's Hospital Trauma and Burn Center

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## Getting the **RIGHT CARE**, at the **RIGHT PLACE**, at the **RIGHT TIME**

The Brigham and Woman's Bum Center is an accredited American Bum Association (ABA) bum center. Our team is always available to assist you in the management of the bum patient and is willing to provide expert assistance in the transfer process as outlined by the ABA.

#### ABA CRITERIA FOR PATIENT TRANSFER TO BURN CENTER

- Partial thickness burns greater than 10% of total body surface area (TBSA);
- Burns involving the face, hands, feet, genitalia, perineum, or major joints;
- Third degree burns in any age group;
- Electric burns, including lightning injury;
- Chemical burns;
- Inhalation injury;
- Burn injury in patients with pre-existing medical disorders that could complicate management, prolong recovery or affect mortality;
- Any patients with burns and concomitant trauma (such as fractures) in which the burn poses the greatest risk of morbidity or mortality;
- Burned children in hospitals without qualified personnel or equipment for the care of children;
- Burn injury in patients who will require special social, emotional or long-term rehabilitative intervention.

**24-Hour Burn/Trauma Patient Transfer Number: 617-732-5034**