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## Insanity

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In his play "The Spanish Friar," English philosopher John Dryden wrote "Insanity: doing the same thing over and over and expecting different results." There are many things we do in EMS that could be considered insanity, but our current practice of spinal immobilization is the best example. Why do we do it? Is it based on science or simply an unfounded fear of litigation?

In 1998, University of New Mexico Emergency Physician Mark Hauswald performed one of the neatest studies I've seen. Hauswald compared spinal injury neurological outcomes for two similar hospitals in different countries. One was the University of New Mexico Hospital in Albuquerque; the other was the University Hospital at the University of Malaya in Kuala Lumpur, Malaysia. The hospitals are of similar size with similar capabilities (i.e., radiological, surgical, medical).

Hauswald conducted a retrospective chart review of all patients at the two hospital between 1988 and 1993. All patients with blunt or penetrating spinal trauma or spinal cord injuries were entered into a database. During the study period, the New Mexico hospital had 12,700 trauma patients admitted; the Malaysia hospital had 16,600 trauma admissions.

Now, this is where it gets interesting. There is no formal ambulance service in the catchment area for the Malaysian hospital. Thus, all patients are brought by private car, donkey cart or similar conveyance. None of the emergency department (ED) staff in Malaysia could ever recall seeing a patient with spinal immobilization in place. On the other hand, the University of New Mexico Hospital's catchment area is well-served by several good ambulance services that provide high-quality spinal immobilization. Thus, you might say, the Malaysia population is a de facto control group and the New Mexico population is the study group.

When the authors compared the two groups, the patients were well matched in terms of age, gender, type of injury and location of injury. The researchers found that in New Mexico, 334 spinal injury patients were fully immobilized, while in Malaysia, 120 spinal injury patients were not immobilized. Of the immobilized patients, 21 percent had neurological disability, but only 11 percent did in the non-immobilized group. Thus, outcomes were worse when the

patient was immobilized. The New Mexico group had more motor vehicle injuries than the Malaysian group which may account for the higher percentage. But the study still illustrates that spinal immobilization had no beneficial effect.

So why do we do it?

In a 2006 Cochrane review, Amado B ez, MD, reviewed the science supporting spinal immobilization. He states, "There are no randomized controlled trials that support or refute the use of spinal immobilization in out-of-hospital trauma victims. Because of the potential complications associated with spinal immobilization, the validity of routine out-of-hospital spinal immobilization in trauma patients should be questioned. In the absence of any evidence, EMS services should evaluate the value of translating current decision rules and evaluating nonrandomized controlled trial research in an effort to mitigate negative outcomes that could result from a routine and unnecessary immobilization practice."

So why does spinal immobilization not work? First, it takes a tremendous amount of energy to cause a spinal injury. Most spinal cord damage occurs at the time of injury and subsequent care does not change this. Second, spinal movement within the spine's normal range of motion requires little energy and is unlikely to injure the spinal cord. Virtually all movements that would be made in the prehospital setting fall within the spine's normal range of motion. Finally, there is no evidence that even proper spinal immobilization (now called "spinal motion restriction") prevents further injury.

Many will argue that, "it's better to safe than sorry." Are we really being safe? Several studies have shown that spinal immobilization is potentially harmful. Research has revealed the risks related to spinal immobilization, which include airway difficulties, increased intracranial pressure, increased risk of aspiration and restricted ventilation. It's also been shown that spinal immobilization leads to increased pain, which can result in delayed discharge from the hospital (and unnecessary diagnostic procedures). In addition, it contributes to ED crowding because a patient with full spinal immobilization must be constantly monitored to prevent aspiration and is thus a one-on-one nursing situation.

We need to stop the insanity. Trauma patients can be transported safely on their side without spinal immobilization. We need to use the science and not dogma to guide the practice of spinal immobilization (and all EMS practices). It's a skill rarely needed (if at all) and one that can be safely applied when spinal clearance criteria are used.

If you're thinking, "Dr. Bledsoe has found another myth to pummel," let me refer you back to a piece I wrote for *JEMS* more than 10 years ago called, "Spinal Immobilization: Have We Gone Too Far?" It's clear that this EMS myth will not die. It's akin to killing a vampire, and special tactics must be applied those being the application of science.

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