

## To be effective, diagnosis and rehabilitation must be based on scientific evidence

### Case in point: Loss of Motion Segment Integrity

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Effective rehabilitation requires accurate diagnosis—and the foundation for accurate diagnosis is scientific evidence. Accordingly, it is critical that your clients are diagnosed based on the most up-to-date scientific evidence. For example, although some assessment centers are requesting a Special Radiological Assessment using an X-ray procedure called Digital Motion X-ray or DMX to determine whether an MVA client suffers from Loss of Motion Segment Instability (LMSI), this approach to diagnosis is not evidence-based. In Canada and the United States, the validity of DMX has not been confirmed so it is considered an experimental procedure. DMX is not a valid procedure for determining LMSI, and there have been at least nine FSCO arbitration hearings finding the DMX invalid.

#### **What is LMSI and what is considered evidence-based diagnosis?**

LMSI is a type of spinal column injury. In simplest terms, LMSI means there is too much movement between two vertebrae of the spine, causing varying degrees of instability. The AMA guidelines indicate LMSI as a 3<sup>rd</sup> degree sprain of cervical and/or lumbar ligaments (two areas of the spine), resulting in a full tear and complete disability. Typically, this is considered a surgical emergency because it is a full tear accompanied by neck pain and neurological signs. It is very rare and potentially fatal (<.07% of traumatic neck and lower back injuries).

#### **The gold standard for diagnosis of LMSI is evidence-based...**

Unlike DMX, the gold standard for determining LMSI is evidence-based. It involves taking static flexion-extension X-rays (extension: view of bent forward spine and extension: view of straight spine) that are compared to see if there is too much movement between the vertebrae of the spine, typically indicating instability. To ensure an accurate diagnosis, the X-rays are viewed in combination with clinical findings. When warranted, an MRI is used to confirm a full tear, and provide recommendations regarding surgery.

#### **Evidence-based recommendations and evidence-based care...**

To ensure your clients receive appropriate and relevant care, it is critical that both their diagnosis and treatment plan are based on scientific evidence. For instance, if in doubt of an LMSI diagnosis, arrange to assess how the diagnosis was determined—and confirm whether it was evidence-based. For instance, there are a lot of exciting developments lately in the world of spinal cord research, for an overview, please see the attachment.

## Keeping up with scientific evidence regarding spinal cord injury Recent research highlights...

### **The Incidence and Prevalence of Spinal Cord Injury in Canada: Overview of Estimates Based on Current Evidence, Rick Hansen Institute and the Urban Futures Institute, December 15, 2010**

- “A new report estimating the incidence and prevalence of spinal cord injury (SCI) in Canada has found that close to 86,000 Canadians are currently living with spinal cord injury and that an estimated 4,300 new cases of spinal cord injury occur in Canada each year, a baseline measurement of the extent of SCI in Canada that was previously unknown.”
- “Of the current estimated 86,000 Canadians living with some form of SCI, 51%—or 44,000—are living with SCI as a result of traumatic causes. It is estimated that of the 4,300 new cases of spinal cord injury in Canada each year, about 1,785 are as the result of traumatic injury from causes such as car accidents.”
- Read more at: <http://www.rickhanseninstitute.org/en/media-room>

### **Regenerating Nerve Cells: Research Offers Hope in New Treatment for Spinal Cord Injuries, Science Daily, May 3, 2011**

- “Rutgers researchers have developed an innovative new treatment that could help minimize nerve damage in spinal cord injuries, promote tissue healing and minimize pain.”
- “Scientists at the W.M. Keck Center for Collaborative Neuroscience and Quark Pharmaceuticals Inc. have developed a chemically synthesized siRNA molecule that decreases the production of the RhoA protein when administered to the spine and allows regeneration of the nerve cells.”
- Read more at: <http://www.sciencedaily.com/releases/2011/05/110503143520.htm>

### **Spinal Cord Processes Information Just as Areas of Brain Do, Research Finds, Science Daily, March 23, 2011**

- “Patrick Stroman's work mapping the function and information processing of the spinal cord could improve treatment for spinal cord injuries.”
- “Dr. Stroman's research is directed at precisely mapping the areas above and below a spinal cord injury in order to better determine the precise nature of an injury and the effectiveness of subsequent treatment. When medical research has advanced to a point where clinicians are able to bridge an injury on a spinal cord, Dr. Stroman's spinal mapping technique will be key in accurately pinpointing the injury to be bridged.”
- Read more at: <http://www.sciencedaily.com/releases/2011/03/110322151308.htm>

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