

Medical Assessor Guidance Note – Number 11

Musculoskeletal system: Spinal Impairment

Assessment of Compression Fracture(s)

Introduction

This material is issued by the Motor Accidents Authority under s.65(2) of the *Motor Accidents Compensation Act 1999* (the Act) in the interests of promoting accurate and consistent medical assessments under the Act. The interpretation provided here is not legally binding but represents the clinically recommended interpretation in an area where more than one interpretation of existing provisions may be possible. This recommended interpretation is publically available. Any medical assessment which does not adopt this interpretation should be accompanied by clinical justification for the interpretation adopted, supported by full, robust reasons.

Reference

The American Medical Association Guides to the Evaluation of Permanent Impairment, Fourth Edition (**AMA 4 Guides**): Table 70, page 108.

Vertebral body compression fracture < 25% = DRE II

Vertebral body compression fracture 25% - 50% = DRE III

Vertebral body compression fracture > 50% = DRE IV or V

The Motor Accidents Authority Permanent Impairment Guidelines – Guidelines for the assessment of permanent impairment of a person injured as a result of a motor vehicle accident 1 October 2007 (**MAA Guidelines**): Clause 4.37, page 28.

“Compression fracture(s): In determining the percentage loss of height of a compression fracture, the loss of vertebral height should be measured at the most compressed part and must be documented in the impairment evaluation report. The estimated normal height of the compressed vertebra should be determined where possible by averaging the heights of the two adjacent (unaffected) vertebrae.”

Background

Radiologists normally measure compression fractures as a percentage of loss of height in the single vertebra. Anterior compression is measured against the posterior (non compressed) height. As a vertebra is not always symmetrical this can lead to error. It is often difficult to distinguish the presence of minor compression in the unaffected portion of the vertebra. Furthermore, the ‘percentage loss of height’ can be difficult to estimate if the entire vertebra is compressed, or when the compression fracture is around 25% or 50%.

When CT scans are used to measure vertebral height the images are often small and thus lead to possible errors in measurement which can be significant in terms of impairment assessment.

Issue requiring clarification

Within the existing guidelines, there is the possibility of error or inconsistency due to differing approaches to measuring actual loss of height and estimating the percentage loss of vertebral height. This error may be due to incorrect methodology or due to measuring error.

Preferred interpretation

To provide further clarification of the existing guidelines, the preferred method of assessing the amount of compression is to use a lateral x-ray of the spinal region with the beam parallel to the disc spaces. If this is not available, a CT scan can be used. Caution should be used in measuring small images (e.g., CT scans), as the error rate will be significant, unless the assessor has the ability to magnify the images electronically (if the images have been supplied on disc). Where possible, the preferred approach is for Assessors not to rely on the estimated percentage compression reported on the radiology report, but, to undertake their own measurements to establish an accurate percentage, as follows:

The area of maximum compression is measured in the vertebra with the compression fracture.

The *same area* of the vertebrae directly above and below the affected vertebra is measured and an average obtained. The measurement from the compressed vertebra is then subtracted from the average of the two adjacent vertebrae. The resultant figure is divided by the average of the two unaffected vertebrae and turned into a percentage.

If there are not two adjacent normal vertebrae, then the next vertebra that is normal and adjacent (above or below the affected vertebra) is used.

Assessors are reminded of clause 4.16 of the MAA Guidelines, which provides that if unable to distinguish between two DRE categories, then the higher of the two categories should apply. The inability to differentiate should be noted and explained in the certificate.

Example:

The measured minimal height of the compressed vertebra is 24mm. The vertebra above has a height *at the same position* of 29mm, and the vertebra below has a height *at the same position* of 31mm.

The average height of the two unaffected vertebrae is therefore 30mm. 24mm is subtracted from 30mm giving 6mm. 6mm divided by 30mm is $1/5^{\text{th}}$, which converts to 20%. There is therefore 20% compression of the fracture which fulfils the criteria for DRE II = 5% WPI.

General recommendations in respect of reading spinal x-rays

Assessors should review the most recent x-rays. (The percentage compression may increase during the initial period of healing but there is unlikely to be any significant change beyond 6 months post MVA).

Assessors should take care to distinguish between compression fractures and developmental changes which may have a similar appearance. In this regard Assessors should consider whether the radiology is consistent with the reported history of injury and symptoms, and whether the appearance of the vertebra is consistent with a fracture (in most recent fractures there is evidence of disruption of a cortical margin).

The result of a radio nucleotide bone scan following a MVA may be relevant with regard to deciding whether the appearance of a vertebra is due to a compression fracture or not. A negative scan within the first nine month period from the time of the MVA is helpful in excluding a fracture (as few fractures would have healed within this period). It should be noted however that the rapidity of bone healing varies, with younger people generally healing more rapidly than older people and small wedge and minor endplate fractures healing more rapidly than larger fractures. Care should be taken to distinguish uptake due to secondary degenerative changes from uptake due to fractures.

Justification for preferred interpretation

There are significant differences in impairment ratings depending on the estimated percentage compression, and there is the possibility of inconsistent approaches being taken within the existing Guidelines. Given the various issues to be considered, Medical Assessors should give a clear explanation of the factors on which their impairment rating was based.

The preferred interpretation and methodology as outlined above is suggested to promote consistency of assessment.

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