(316) 688-5656 Appointments
(316) 688-5757 Patient Accounts & Billing

(316) 688-5454 Medical Records
(316) 683-8787 Fax

The Hand Center
ORTHOPAEDICS OF THE HAND & UPPER EXTREMITY

February 12, 2015

Chairwoman Lynn, members of the Committee, thank you for the opportunity to appear today. My name is Mark Melhorn. I am here today on behalf of the Kansas Medical Society and the science that was used to develop the Sixth Edition of the AMA *Guides to the Evaluation of Permanent Impairment*. After you have reviewed the science, I believe that you will understand why I am here today to encourage you to vote "no" on SB 167.

I graduated from the University of Kansas, School of Medicine and after completing my residency in Wichita and my fellowship at the University of Southern California, returned to Wichita, Kansas. I have been practicing in Wichita since 1986 and I am currently on the faculty of KUMC-Wichita as an Associate Clinical Professor of Orthopaedics.

I would like the committee to be aware that I have been a volunteer (nonpaid) contributor to the Fourth, Fifth, and Sixth Editions of the *Guides* and the AMA *Guides Newsletter*. I have no financial interest in either product, my full disclosure is provided in this document.

Summary

The Fourth Edition was created in 1992 and first printed in June 1993. The First Edition was printed in 1971 and the Sixth Edition in 2007. Each edition has reflected and incorporated the improved science of impairment and assessment, along with the improvements in medical treatments, which have resulted in better outcomes. The current Sixth Edition of the AMA *Guides* reflects the current best science and expert consensus. The Fourth Edition is out of date by over two decades.

The AMA *Guides* recommends that the current edition be used. This recommendation is based on the fact that the current best science was used to develop the "newest" edition. Currently there are over 22 states which have moved to the Sixth Edition along with the United States Department of Labor.

Spinal impairments in Fourth Edition were based primarily on the condition (diagnosis) at any time from the onset of the condition to the end of treatment or maximum medical improvement (MMI), this is known as "injury based" impairment. So the diagnosis was driving the impairment, not the final outcome. The trend in the Fifth and Sixth is to rate at MMI which is the international standard known as "outcome based" impairments. In other words, if the condition is improved by the treatment the impairment should be less. The goal of all treatment, including surgery, should be to improve function and decrease impairment. The Fourth Edition did not take the benefits of healthcare into consideration for many conditions and in particular spinal ratings. Again, impairment should be based on what is wrong (functional loss) when improvement with time and

625 N. Carriage Parkway • Suite 125 • Wichita, Kansas 67208-4510

treatment is complete. Functional loss is best determined by current medical science. See Supporting Science below for details.

When the Fourth Edition was developed, in many states individuals with work injuries were seen late in their condition and therefore had more significant functions loss. With patients being seen sooner, earlier intervention has resulted in improved outcomes and reduced impairments. In addition, changes in surgical technique have resulted in small incisions ("minimally invasive surgery") resulting in faster recovery and more complete recovery, so patients who are currently treated have better outcomes than those treated in the 1980s (on which the impairments in the Fourth Edition were based). Therefore, the overall impairments have gradually decreased reflecting the improved science and quality of healthcare, but the *AMA Guides Sixth* Edition has retained the ability to provide higher impairments for individuals with significant impairments at the end of their treatment.

Evidence based medicine has resulted in improved understanding for the need for inter-rater and intra-rater reliability. This approach is required to be fair to each injured worker. In statistics, intra-rater reliability is the degree of agreement among repeated administrations of a diagnostic test performed by a single person, or same rater. The second requirement is inter-rater reliability which is the level of agreement or concordance among different individuals (different impairment raters) when presented with the same information. The homogeneity or consensus of the scores determines if a particular scale is appropriate for measuring a particular variable. If various raters do not agree, either the scale is defective or the raters need to be re-trained.

Benefits to the injured worker

Medical studies demonstrate that early return to work is in the injured workers best interest. Examples include improved quality of life and a greater likelihood of remaining employed. Inter-rater and intra-rater reliability reduces unnecessary time off work during the phase of the litigation process from impairment to settlement. This reduced conflict is beneficial to the workers' compensation system and to the injured worker. See Supporting Science below for details.

Ratable conditions

The Sixth Edition has greatly increased the number of conditions that can be rated. With our improved understanding of impairment, more conditions can be rated. For example, impairment ratings are now included for conditions that may result in functional loss, but previously did not result in a ratable impairment such as trigger finger, lateral epicondylitis (tennis elbow), nonspecific shoulder pain, nonspecific neck pain, nonspecific low back pain, hip bursitis, hip strains, etc. In addition many procedures now being commonly performed by surgeons treating injured workers can be rated by the Sixth Edition, but are not mentioned in the Fourth Edition, because they had not yet been developed. Examples include total shoulder replacement, reverse total shoulder replacement, total ankle replacement, cervical artificial disc replacement, lumbar artificial disc replacement, etc.

Why is there resistance to change?

Studies demonstrate that people resist change:

• When the reason for the change is unclear.

• When the proposed users have not been consulted about the change and the change is offered to them as an accomplished fact.
• When the change threatens to modify established patterns of working relationships between people.
• When change threatens their perceived financial interests regardless of the benefits to others.
• When the benefits for making the change are not seen as adequate for the trouble involved.

The impact of changing from the Fourth to the Sixth

The January/February 2010 AMA *Guides Newsletter* report on a "Comparative Analysis of AMA *Guides* Ratings by the Fourth, Fifth, and Sixth Editions.

Two hundred cases were assessed, and the clinical data were used to determine the resulting whole person permanent impairment according to each of these 3 editions. If the case reflected more than 1 diagnosis, each diagnosis was rated, and if both extremities were involved (eg, a bilateral carpal tunnel syndrome), each was rated as a separate diagnosis since each would be associated with a separate impairment.

The difference between average whole person impairment ratings was tested using a paired sample t-test analysis, with an alpha level set at the .05 level of significance. This analysis revealed a statistically significant difference between average whole person impairment ratings when comparing the Sixth Edition with the Fifth Edition, but not when comparing the Sixth Edition results with those of the Fourth Edition.

With the Sixth Edition there were meaningful changes in impairment ratings as a result of not providing additional impairment for surgical (therapeutic) spine procedures, improved outcomes with surgical release for carpal tunnel syndrome, and improved outcomes with total knee and hip replacement.

Examples of some specific impairments

The global value above demonstrated no significant different between the Fourth and Sixth Edition, but certainly one can select a specific diagnosis and see a difference. In other words, if you total all of the increases and all of the decreases, the total impact was not statistically significant. A few examples would be helpful.

1. Symptoms of neck pain but no objective findings: Fourth Edition page 103 Cervicothoracic Spine DRE 1 = 0% impairment, Sixth Edition page 564 = 1 to 3% WPI.

2. Symptoms of low back pain but no objective findings: Fourth Edition page 102 Lumbosacral Spine DRE 1 = 0% impairment, Sixth Edition page 570 = 1 to 3% WPI.

3. Single or multiple level fractures of lumbar vertebra with > 50% compression of one vertebral body with or without retropulsion with or without pedicle and/or posterior element fracture, healed with or without surgical interventions with residual deformity and with or without documented radiculopathy at a single clinically appropriate level present at the time of examination: Fourth Edition page 102 DRE IV = 20%, Sixth Edition page 574 Class 3 range 15 to 23%.

4. Intervertebral disk herniation or Alteration of Motion Segment Integrity (AOMSI) at a single level with medically documented findings , with or without surgery, and with documented residual radiculopathy at the clinically appropriate level present at the time of examination.: Fourth Edition 102 DRE III radiculopathy = 10%, Sixth Edition page 570 Class 2 range 10 to 14%.

5. Carpal tunnel syndrome post-surgery with residual subjects symptoms and NCT with conduction delay: Fourth Edition section 3.1k range 1 to 7 % upper limb, table 16 page 57 10%, Fifth Edition page 495 range 0 to 5%, Sixth Edition 1 to 3 %. However, if severe and axon loss is present the range is 7 to 9%.

The advantage of the Sixth Edition provides a range instead of the Fourth Edition where one rating "fits" all individuals with the same diagnosis regardless of their treatment outcome. See Supporting Science below for details.

Impairment and Disability

It is important to remember the difference between impairment and disability. Impairment is defined by the AMA *Guides* as a significant deviation, loss or loss of use of any body structure or function in an individual with a health condition, disorder, or disease. This is different than disability which is defined as an umbrella term for activity limitations and/or participation restrictions in an individual with a health condition, disorder, or disease. Impairment is determined the medical science while disability is determined by the judicial system which can take into consideration individual functional limitations in the workplace and in non-workplace activity based on social justice. An additional advantage of the Sixth Edition is that the physician can include the injured workers' reported symptoms in the final impairment. This provides the ability to adjust impairment per individual outcomes. The Fourth Edition does not have this option. Again, this is another example of our improved understanding of the science of impairment.

Availability

Print copies of the Fourth Edition may soon become unavailable as future reprinting is unlikely. This will result in limited access for new physicians.

Exclusive remedy

As the name suggests, an exclusive remedy clause exhaustively spells out the remedies available to a party for a particular event. All other remedies are excluded. To date, there have been no issues regarding exclusive remedy in the other states or Federal jurisdictions with use of the Sixth Edition.

Other considerations

Although not part of the medical consideration when reviewing SB 167, if the goal is fair compensation for the injured worker, I see no basis for changing the current threshold as listed on page 5 line 21 regarding "An employee may be eligible to receive permanent partial general disability compensation in excess of the percentage of functional impairment ("work disability") if: (i) The percentage of functional impairment determined to be caused solely by the injury ~~exceeds 7½%~~ equals or exceeds 10% to the body as a whole or the overall functional impairment is equal to

or exceeds ~~10%~~ 12 ½ % to the body as a whole in cases where there is preexisting functional impairment; and
(ii) the employee sustained a post-injury wage loss, as defined in ~~subsection (a)(2)(E) of~~ K.S.A. 44-510e(a)(2)(E), and amendments thereto, of at least 10% which is directly attributable to the work injury and not to other causes or factors.

In conclusion, the Fourth Edition is over two decades old and is out of date. We would not consider practicing medicine based on an outdated textbook, especially when previous approaches were found to be wrong. Rather, we should want to practice using the current best science. We should take the same approach when assessing impairment.

Thank you for the opportunity to appear before you today. I would be happy to stand for questions at the appropriate time.

Sincerely,

J. Mark Melhorn, MD

Supporting Science

Summary

Materials obtained from The Guides Newsletter January/February 2008 (used with permission)

The Guides Newsletter

Expert advice, practical information, and current trends on impairment evaluation

January/February 2008

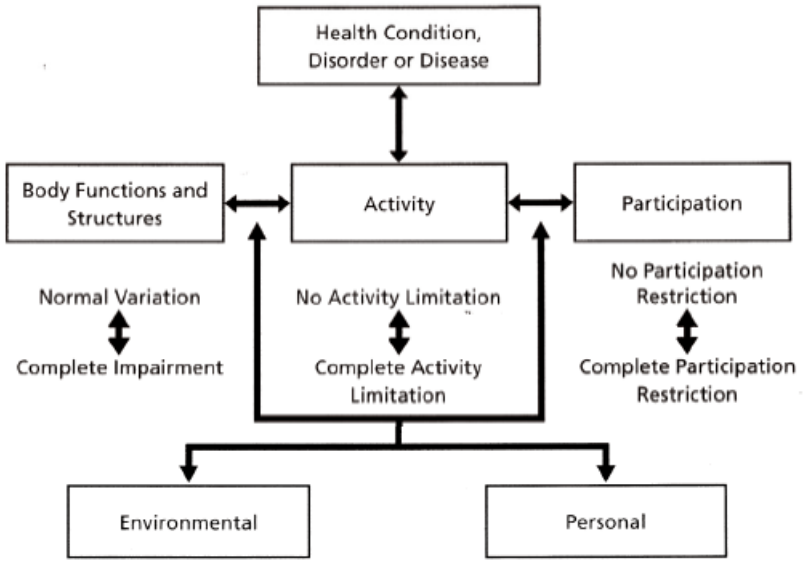
In upcoming issues

Upper Extremities: Sixth Edition

Sixth Edition: the New Standard

by Christopher R. Brigham, MD, MMS, Robert D. Rondinelli, MD, PhD, Elizabeth Genovese, MD, MBA, Craig Uejo, MD, MPH and Marjorie Eskay-Auerbach, MD, JD

Figure 1. ICF Model of Disablement



The following definitions are used in the ICF to facilitate communications and standardization:

- Body functions: physiological functions of body systems (including psychological functions).
- Body structures: anatomic parts of the body such as organs, limbs, and their components.
- Activity: execution of a task or action by an individual.
- Participation: involvement in a life situation.
- Impairments: problems in body function or structure such as a significant deviation or loss.
- Activity limitations: difficulties an individual may have in executing activities.
- Participation restrictions: problems an individual may experience in involvement in life situations.

Improvements in the 6th

• Standardize assessment of Activities of Daily Living (ADL) limitations associated with physical impairments.
• Apply functional assessment tools to validate impairment rating scales.
• Include measures of functional loss in the impairment rating.
• Improve overall intrarater and interrater reliability and internal consistency.
• The most contemporary evidence-based concepts and terminology of disablement from the ICF.
• The latest scientific research and evolving medical opinions provided by nationally and internationally recognized experts.
• Unified methodology that helps physicians calculate impairment ratings through a grid construct and promotes consistent scoring of impairment ratings.
• A more comprehensive and expanded diagnostic approach.
• Precise documentation of functional outcomes, physical findings, and clinical test results, as modifiers of impairment severity.
• Increased transparency and precision of the impairment ratings.
• Improved physician interrater reliability.

Figure 3. Diagnosis-Based Grid Template

Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
RANGES	0%	Minimal%	Moderate%	Severe%	Very Severe%
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Findings	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Test Results	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

References

1 American Medical Association. Guides to the Evaluation of Permanent Impairment. Sixth Edition. Chicago, Illinois. American Medical Association; 2008.
2 World Health Organization. International Classification of Functioning, Disability and Health: ICF. Geneva, Switzerland: World Health Organization; 2001. http://www.who.int/classifications/icf/en/
3 American Medical Association. A guide to the evaluation of permanent impairment of the extremities and back. JAMA. 1958;166 (suppl):l–122.
4 American Medical Association. Guides to the Evaluation of Permanent Impairment. First Edition. Chicago, Illinois. American Medical Association; 1971.
5 American Medical Association. Guides to the Evaluation of Permanent Impairment. Second Edition. Chicago, Illinois. American Medical Association; 1984.
6 American Medical Association. Guides to the Evaluation of Permanent Impairment. Third Edition. Chicago, Illinois. American Medical Association; 1988.

7 Swanson, AB. Evaluation of Impairment of Function in the Hand. Surg Clin North Am. 1964; 44: 925-40.
8 American Medical Association. Guides to the Evaluation of Permanent Impairment. Third Edition Revised. Chicago, Illinois. American Medical Association; 1990.
9 American Medical Association.Guides to the Evaluation of Permanent Impairment. Fourth Edition. Chicago, Illinois. American Medical Association; 1993.

Ratable conditions

The impact of changing from the Fourth to the Sixth

Materials obtained from The Guides Newsletter January/February 2010 (used with permission)

Expert advice, practical information, and current trends on impairment evaluation

January/February 2010

In this issue

Comparative Analysis of AMA *Guides* Ratings by the Fourth, Fifth, and Sixth Editions

Comparative Analysis of AMA *Guides* Ratings by the Fourth, Fifth, and Sixth Editions*

By Christopher R. Brigham, MD, Craig Uejo, MD, MPH, Aimee McEntire, and Leslie Dilbeck

1. American Medical Association. Guides to the Evaluation of Permanent Impairment. Sixth Edition. Chicago, IL: American Medical Association; 2008.
2. American Medical Association. Guides to the Evaluation of Permanent Impairment. Fourth Edition. Chicago, IL: American Medical Association; 1993.
3. American Medical Association. Guides to the Evaluation of Permanent Impairment. Fifth Edition. Chicago, IL: American Medical Association; 2000.
4. World Health Organization. International Classification of Functioning, Disability and Health: ICF. Geneva, Switzerland: World Health Organization; 2001.
http://www.who.int/classifications/icf/en/
5. Burd JG. The educated guess: doctors and permanent partial disability percentage. J Tenn Med Assoc. 1980;783:44l.
6. Clark WL, Haldeman S, Johnson P, et al. Back impairment and disability determination: another attempt at objective, reliable rating. Spine. 1988;13: 332-341.
7. Hinderer SR, Rondinelli RD, Katz RT. Measurement issues in impairment rating and disability evaluation. In: Rondinelli RD, Katz RT, eds.
Impairment Rating and Disability Evaluation. Philadelphia, PA: WB Saunders Co; 2000:35-52.
8. Pryor ES. Flawed promises: critical evaluation of the AMA Guides to the Evaluation of Permanent Impairment. Harvard Law Rev. 1990;103:964-976.

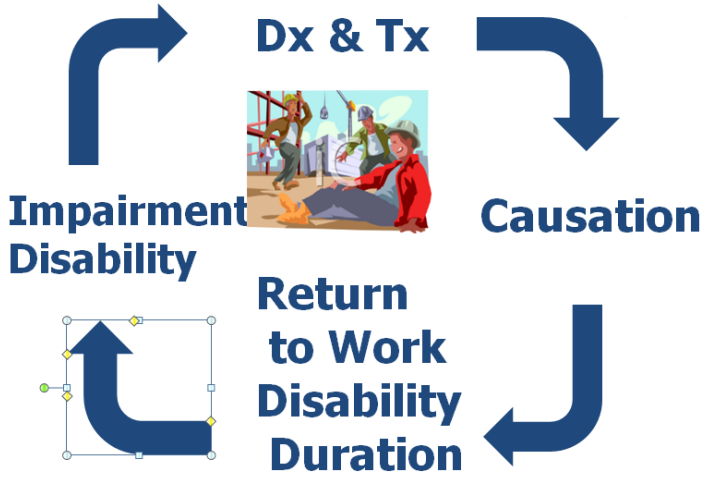
9. Rondinelli RD. Duncan PW. The concepts of impairment and disability. In: Rondinelli RD, Katz RT, eds. Impairment Rating and Disability Evaluation. Philadelphia, PA: WB Saunders Co; 2000:17-33.
10. Rondinelli RD, Dunn W, Hassanein KM, et al. Simulation of hand impairments: effects on upper extremity function and implications toward medical impairment rating and disability determination. Arch Phys Med Rehabil. 1997;78:1358-1563.
11. Rondinelli RD, Katz RT. Merits and shortcomings of the American Medical Association Guides to the Evaluation of Permanent Impairment, 5th edition: a physiatric perspective. Phys Med Rehabil Clin N Am. 2002;13:355-370.
12. Spieler EA, Barth PS, Burton JF, et al. Recommendations to guide revision of the Guides to the Evaluation of Permanent Impairment. JAMA. 2000;283(4):519-523.
13. Brigham CR, Uejo C, Dilbeck L, Walker P. Errors in impairment rating: challenges and opportunities. J Workers Compensation. 2006;15(4):19-42.
* This comparative study was commissioned by the American Medical Association and performed by Impairment Resources, LLC.

Benefits to the injured worker

J. B. Talmage, J. M. Melhorn, and M. H. Hyman. The Guides to the Evaluation of Work Ability and Return to Work, Chicago, IL: American Medical Association, 2011. 510 pages.

J. M. Melhorn. Working with Upper Limb Conditions. In: 16th Annual AAOS Workers' Compensation and Musculoskeletal Injuries: Improving outcomes with back-to-work, legal and administrative strategies, edited by J. M. Melhorn and I. B. Fries, Rosemont, IL:American Academy of Orthopaedic Surgeons, 2014.

J. M. Melhorn. Causation for Upper Limb Conditions. In: 16th Annual AAOS Workers' Compensation and Musculoskeletal Injuries: Improving outcomes with back-to-work, legal and administrative strategies, edited by J. M. Melhorn and I. B. Fries, Rosemont, IL:American Academy of Orthopaedic Surgeons, 2014.



E. Kilgour, A. Kosny, D. McKenzie, and A. Collie. Interactions Between Injured Workers and Insurers in Workers' Compensation Systems: A Systematic Review of Qualitative Research Literature. J Occup Rehabil, 2014.{12996} reviewed 1006 articles screened to 18, reviewed bibs for 27 reduced to 13 articles. The concluded:
1. Involvement in compensation systems contributes to poorer outcomes for claimants.
2. Interactions between insurers and injured workers were interwoven in cyclical and pathogenic relationships, which influence the development of secondary injury in the form of psychosocial consequences instead of fostering recovery of injured workers.

G. M. Grant, M. L. O'Donnell, M. J. Spittal, M. Creamer, and D. M. Studdert. Relationship between stressfulness of claiming for injury compensation and long-term recovery: a prospective cohort study. JAMA Psychiatry 71 (4):446-453, 2014.{12966} found that many claimants experience high levels of stress from engaging with injury compensation schemes and this experience resulted in poor long-term recovery.

Examples of some specific impairments
Outcome impairments reflect changing healthcare.
Spine surgery has changed significantly over the last 20 years. The pedicle screw was introduced in 1996, anterior cervical plates and fusion techniques have improved, and laminoplasties are replacing laminectomies.
Nguyen TH, Randolph DC, Talmage JB, Succop P, Travis R: Long-term outcomes of lumbar fusion among workers' compensation subjects: a historical cohort study. Spine (Phila Pa 1976) 36:320-331, 2011.
Sasso RC, Anderson PA, Riew KD, Heller JG: Results of cervical arthroplasty compared with anterior discectomy and fusion: four-year clinical outcomes in a prospective, randomized controlled trial. J Bone Joint Surg Am 93:1684-1692, 2011.
Allain J, Delecrin J, Beaurain J, et al: Stand-alone ALIF with integrated intracorporeal anchoring plates in the treatment of degenerative lumbar disc disease: a prospective study on 65 cases. Eur Spine J 23:2136-2143, 2014.
Awad BI, Lubelski D, Shin JH, et al: Bilateral Pedicle Screw Fixation versus Unilateral Pedicle and Contralateral Facet Screws for Minimally Invasive Transforaminal Lumbar Interbody Fusion: Clinical Outcomes and Cost Analysis. Global Spine J 3:225-230, 2013.
Chen F, Kang Y, Li H, et al: Treatment of Lumbar Split Fracture-dislocation with Short- or Long-segment Posterior Fixation and Anterior Fusion. J Spinal Disord Tech 2014.
Dangelmajer S, Zadnik PL, Rodriguez ST, Gokaslan ZL, Sciubba DM: Minimally invasive spine surgery for adult degenerative lumbar scoliosis. Neurosurg Focus 36:E7-2014.

Carpal tunnel surgery has changed as most individuals now present early with symptoms before permanent muscle loss occurs. Routine surgery is performed in the office with local anesthetic instead of a 2 day hospital admission with general anesthesia and 4 weeks in a cast splint.
American Academy of Orthopaedic Surgeons (AAOS) Clinical Guideline on Diagnosis of Carpal Tunnel Syndrome, Rosemont, IL: American Academy of Orthopaedic Surgeons, 2007. 125 pages.

American College of Occupational and Environmental Medicine. Hand, Wrist, and Forearm Disorders ACOEM Practice Guidelines. In: ACOEM Occupational Medicine Practice, edited by K. T. Hegmann, Elk Grove Village, IL: American College of Occupational and Environmental Medicine, 2011, p. 571-927.

Full disclosure

The Hand Center
MAP Mangers, owner of CtdMAP
PHI = Physical Health Index – Health Assessment
Books: Physician's Guide to Return To Work, Guides to the Evaluation of Disease and Injury Causation, etc
Professional Organizations: ABA, AMA, AADEP, AAOS, ACOEM, ASSH, AAHS, IAIABC, SDPM, etc
Organizations: MDA, ODG, SEAK, etc
Speaker: multiple national and state level organizations
Reviewer: multiple journals and books
Any other task or job that will improve outcomes for injured workers

Other considerations

Example of DBI tables for a better understanding of the Sixth Edition.

Cervical Spine Regional Grid

CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RATING (WPI %)	0	1%–8%	9%–14%	15%–24%	25%–30%
SOFT TISSUE AND NON- SPECIFIC CONDITIONS					
Non-specific chronic, or chronic recurrent neck pain (also known as chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, chronic whiplash, etc)	0 Documented history of sprain/strain-type injury, now **resolved, or occasional complaints of neck pain with no objective findings** on examination	1 1 2 3 3 Documented history of sprain/strain-type injury with continued complaints of **axial and/or nonverifiable radicular complaints; similar findings documented on multiple occasions** (see Section 17.2 General Considerations)			
MOTION SEGMENT LESIONS					
Intervertebral disc herniation and/or AOMSI[a] *Note:* AOMSI includes instability (specifically as defined in the *Guides*), arthrodesis, failed arthrodesis, dynamic stabilization or arthroplasty, or combinations of those in multiple-level conditions	0 Imaging findings of intervertebral disk herniation without a history of clinically correlating radicular symptoms	4 5 6 7 8 Intervertebral disk herniation(s) or documented AOMSI **at a single level or multiple levels** with medically documented findings; with or without surgery ***and*** for disk herniation(s) with documented **resolved radiculopathy or nonverifiable radicular complaints** at the clinically appropriate level(s) present at the time of examination[b]	9 10 11 12 14 Intervertebral disk herniation and/or AOMSI **at a single level** with medically documented findings; with or without surgery ***and*** with documented **residual radiculopathy at the clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	15 17 19 21 23 Intervertebral disk herniations or AOMSI **at multiple levels,** with medically documented findings; with or without surgery ***and*** with documented signs of **residual radiculopathy at a single clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	25 27 28 29 30 Intervertebral disk herniation(s) or AOMSI, with medically documented findings; with or without surgery ***and*** with documented signs of **residual bilateral or multiple-level radiculopathy at the clinically appropriate levels** present at the time of examination *(see Table 17-7 to grade radiculopathy)*
Pseudarthrosis *Note:* Only applies after spinal surgery intended for fusion with resultant documented motion (not necessarily AOMSI by definition provided in footnote) with consistent radiographic findings or hardware failure; with or without surgery to repair	0	4 5 6 7 8 Pseudarthrosis (post surgery) at a **single level or multiple levels** with medically documented findings ***and*** with documented **resolved radiculopathy or nonverifiable radicular** complaints at the clinically appropriate level present at the time of examination	9 10 11 12 14 Pseudarthrosis (post surgery) at a **single level** with medically documented findings ***and*** with documented **radiculopathy at the clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	15 17 19 21 23 Pseudarthrosis (post surgery) at a **multiple levels** with medically documented findings ***and*** with documented **radiculopathy at a single clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	25 27 28 29 30 Pseudarthrosis (post surgery) at a **multiple levels** with medically documented findings ***and*** with documented signs of **bilateral or multiple-level radiculopathy at the clinically appropriate levels** present at the time of examination *(see Table 17-7 to grade radiculopathy)*

[a] See footnote [a] on page 571.
[b] Or AOMSI in the absence of radiculopathy, or with documented resolved radiculopathy or nonverifiable radicular complaints at the clinically appropriate levels present at the time of examination.

Lumbar Spine Regional Grid

CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RATING (WPI %)	0	1%–9%	10%–14%	15%–24%	25%–33%
SOFT TISSUE AND NON-SPECIFIC CONDITIONS					
Non-specific chronic, or chronic recurrent low back pain (also known as: chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc)	0 Documented history of sprain/strain-type injury, now **resolved, or occasional complaints of back pain with no objective findings** on examination	1 2 3 3 Documented history of sprain/strain type injury with continued complaints of **axial and/or nonverifiable radicular complaints** and similar findings on multiple occasions (see Sec. 17.2, General Considerations)			
MOTION SEGMENT LESIONS					
Intervertebral disk herniation and/or AOMSI[a] *Note:* AOMSI includes instability (specifically as defined in the *Guides*), arthrodesis, failed arthrodesis, dynamic stabilization or arthroplasty, or combinations of those in multiple-level conditions	0 Imaging findings of intervertebral disk herniation without a history of clinically correlating radicular symptoms	5 6 7 8 9 Intervertebral disk herniation(s) or documented AOMSI, at a **single level or multiple levels** with medically documented findings; with or without surgery ***and*** for disk herniation(s) with documented **resolved radiculopathy or nonverifiable radicular complaints at clinically appropriate level(s),** present at the time of examination[a]	10 11 12 13 14 Intervertebral disk herniation or AOMSI **at a single level** with medically documented findings; with or without surgery ***and*** with documented **residual radiculopathy at the clinically appropriate level** present at the time of examination *(see Physical Examination adjustment grid in Table 17-7 to grade radiculopathy)*	15 17 19 21 23 Intervertebral disk herniations or AOMSI **at multiple levels**, with medically documented findings; with or without surgery ***and*** with documented **residual radiculopathy at a single clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	25 27 29 31 33 Intervertebral disk herniations and/or AOMSI, **at multiple levels**, with medically documented findings; with or without surgery ***and*** with documented signs of **residual bilateral or multiple-level radiculopathy at the clinically appropriate levels** present at the time of examination *(see Table 17-7 to grade radiculopathy)*
Pseudarthrosis *Note:* Only applies after spinal surgery intended for fusion with resultant documented motion (not necessarily AOMSI by definition provided in footnote) with consistent radiographic findings or hardware failure; with or without surgery to repair	0	5 6 7 8 9 Pseudarthrosis (post surgery) at a **single level or multiple levels** with medically documented findings ***and*** with documented **resolved radiculopathy or nonverifiable radicular complaints** at the clinically appropriate level(s) present at the time of examination	10 11 12 13 14 Pseudarthrosis (post surgery) at a **single level** with medically documented findings may have documented signs of **radiculopathy at the clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	15 17 19 21 23 Pseudarthrosis (post surgery) at a **multiple levels** with medically documented findings may have documented **radiculopathy at a single clinically appropriate level** present at the time of examination *(see Table 17-7 to grade radiculopathy)*	25 27 29 31 33 Pseudarthrosis (post surgery) at a **multiple levels** with medically documented findings may have documented signs of **bilateral or multiple level radiculopathy at the clinically appropriate levels** present at the time of examination *(see Table 17-7 to grade radiculopathy)*

[a] Or AOMSI in the absence of radiculopathy, or with documented resolved radiculopathy or nonverifiable radicular complaints at the clinically appropriate levels present at the time of examination.

Shoulder Regional Grid

IMPAIRMENT CLASS	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
IMPAIRMENT RANGES (upper extremity %)	0	1%–13% UE	14%–25% UE	26%–49% UE	50%–100% UE
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
SOFT TISSUE*					
Shoulder pain,* nonspecific shoulder pain following injury or occupational exposure	0 No significant symptoms or signs at MMI	0 0 1 1 1 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)			
Shoulder contusion or crush injury* with healed minor soft tissue or skin injury		1 2 2 2 3 Residual symptoms and consistent objective findings at MMI			
Shoulder bursitis					
MUSCLE/TENDON*					
Shoulder pain* nonspecific shoulder pain post acute injury or surgery (not otherwise specified)	0 No significant symptoms or signs at MMI	0 0 1 1 1 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)			
Sprain/strain*: No residual instability or loss of motion but persisting pain at MMI	0 No significant objective abnormal findings of muscle or tendon injury at MMI	0 1 1 2 2 History of painful injury, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)			

Foot and Ankle Regional Grid (LEI)

DIAGNOSTIC CRITERIA (KEY FACTOR)	CLASS 0	CLASS 1	CLASS 2	CLASS 3	CLASS 4
CLASS DEFINITIONS	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
IMPAIRMENT RANGES	0% LE	1%–13% LE	14%–25% LE	26%–49% LE	50%–100% LE
SEVERITY GRADE		A B C D E	A B C D E	A B C D E	A B C D E
SOFT TISSUE					
Nail abnormalities secondary to trauma Callus/recurrent healed plantar ulceration under post traumatic bony prominence; contusion/crush injury; plantar fasciitis; plantar fibromatosis; symptomatic soft tissue mass (ganglion, etc); retrocalcaneal bursitis	0 No significant objective abnormal findings on examination or radiographic studies at MMI	0 1 1 2 2 Significant consistent palpatory findings and/or radiographic findings			
MUSCLE / TENDON		**Do not use PE range of motion if used for diagnostic criteria**			
Strain; tendonitis; or h/o ruptured tendon, specifically involving posterior tibial, anterior tibial, achilles, or peroneal tendon (all other tendons below)	0 No significant objective abnormal findings of muscle or tendon injury at MMI	0 1 1 2 2 Palpatory findings and/or radiographic findings 3 4 5 6 7 Mild motion deficits 7 8 10 12 13 Moderate motion deficits and/or significant weakness	14 15 16 17 18 Flexible deformity and loss of specific tendon function	28 31 34 37 40 Fixed deformity and loss of specific tendon function	
Strain; tendonitis; or h/o ruptured tendon All other tendons	0 No significant objective abnormal findings of muscle or tendon injury at MMI	0 1 1 2 2 Palpatory findings and/or radiographic findings 1 2 2 2 3 Mild motion deficits 3 4 5 6 7 Moderate motion deficits and/or significant weakness			