AMA Guides - Sixth Edition:

Evolving Concepts, Challenges and Opportunities

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Table of Contents

Learning Objectives

As a result of this learning opportunity, you will be able to:

1. Discuss the International Classification of Functioning, Disability and Health (ICF) and its role in impairment evaluation.

2. Explain the reasons for revision of our prior approaches to impairment assessment.

3. Describe how to determine Diagnosis-Based Impairments, and make adjustments on the basis of the results of Functional History, Physical Examination, and Clinical Studies.

4. Demonstrate the ability to score Functional Inventories (including the QuickDASH, Lower Limb Outcome Scale, and Pain Disability Questionnaire).

5. Explain why methods used in previous editions (such as spinal range of motion assessment and strength determination) are no longer determinates.

6. Demonstrate the ability to rate most commonly rated disorders, including spinal pain, upper limb disorders (hand, wrist, elbow, shoulders and entrapments), lower limb disorders (foot / ankle, knee and foot), nervous system disorders, and pain.

7. Discuss challenges and opportunities associated with this evolution in impairment assessment.

Seminar Director

Christopher R. Brigham, MD is the Chairman of Impairment Resources, LLC. He is the Senior Contributing Editor for the AMA Guides to the Evaluation of Permanent Impairment, Sixth Edition, and was a contributor/author for several chapters, including Upper Extremities, Lower Extremities, and Spine. With the Fifth Edition, he served on the Advisory Committee and as a contributor. Dr. Brigham is Board-Certified in Occupational Medicine (ABPM), Founding Director of the American Board of Independent Medical Examiners (ABIME), Master Fellow, Academy of Independent Medical Examiners of Hawaii (AIMEH), a Fellow of the American College of Occupational Environmental Medicine (FACOEM), a Fellow of the American Academy of Disability Evaluating Physicians (FAADEP) with Certification in Evaluation of Disability and Impairment Rating (CEDIR), a Certified Independent Medical Examiner (CIME), a Certified Impairment Rater (CIR), and a graduate of the Washington University School of Medicine – St. Louis. He is the Editor of the AMA publications, *The Guides Newsletter* and *The Guides Casebook*. He was co-author of the text Understanding the AMA Guides in Workers' Compensation, Third Edition, has written over two hundred published articles on impairment and disability evaluation and other texts, chaired the Medical Advisory Board for the Medical Disability Advisor, Fourth Edition, is featured in several video, audio, and web-based productions in the medicolegal field, and has trained thousands of physicians, attorneys, claims professionals, and fact-finders, throughout the US, Canada, and internationally. He is an experienced professional speaker. As a clinician with over thirty years experience, he has performed several thousand independent medical and impairment evaluations, providing him with excellent insight to the complexities of human potential, impairment, and disability. As a result of this experience, he has consulted for numerous organizations (including governmental jurisdictions). His curriculum vitae is available at **http://www.impairment.com/PDFFiles/BrighamC_CV.pdf**

Orientation

The American Medical Association's *Guides to the Evaluation of Permanent Impairment* serves as the **standard for defining impairment in most workers' compensation, motor vehicle casualty and personal injury cases.** The Sixth Edition[1], published in December 2007, introduces new approaches to rating impairment, using innovative methodology to enhance the relevancy of impairment ratings, improve internal consistency, promote greater precision and simplify the rating process. The **approach is based on a modification of the conceptual framework of the International Classification of Functioning, Disability, and Health (ICF)**,[2] although the fundamental principles underlying the *Guides* remain unchanged. To appreciate the impact of the Sixth Edition, it is useful to understand the history and structure of the *Guides*, previous criticisms, and the new approaches used in the Sixth Edition. Case examples illustrate the appropriate application of the Sixth Edition.

Use of the Guides

The AMA *Guides to the Evaluation of Permanent* Impairment is the basis for defining impairment in the vast majority of workers' compensation jurisdictions, and the use of the most recent Edition will be required immediately by certain state jurisdictions and for Federal and Longshore and Harbor Workers' Act cases.

The *Guides* **started in 1958** with publication by the American Medical Association (AMA) of the article, "A Guide to the Evaluation of Permanent Impairment of the Extremities and Back"[3]; this was followed by additional guides published in the Journal of the American Medical Association. In 1971 a compendium of 13 guides became the First Edition.[4] The Second Edition[5] was published thirteen years later in 1984, with publication of the Third Edition[6] in 1988. The Third Edition was the first to use the Swanson methodology[7] which assigned discreet impairment ratings to specific range of motion (ROM) deficits of the upper extremities. Although the Third Edition was replaced two years later by the Third Edition, Revised[8], which is still used by the State of Colorado for workers compensation cases, the use of ROM "pie charts" to assess impairment from upper extremity ROM deficits was retained.

The **Fourth Edition**[9], published in 1993, provided many refinements, including the Diagnosis- Related Estimates (DRE) or "injury" model for the evaluation of spinal injuries, alternative approaches to assessing lower extremity impairment, and a pain chapter. The DRE model was unique in allowing for assignment of an impairment rating based solely on the diagnosis, even if MMI had not yet been reached. The Fourth Edition is still used for assessing workers compensation cases in Alabama, Arkansas, Kansas, Maine, Maryland, South Dakota, Texas, and West Virginia.

The **Fifth Edition**[10], published in 2000, was nearly twice the size of its predecessor, provided more detailed directives in all chapters, and modified the approaches used for spinal impairment evaluation by providing guidance on choice of the rating method and providing ranges for Diagnosis-Related Estimates (DRE) categories. The Fifth Edition is used in California, Delaware, Georgia, Hawaii, Idaho, Iowa, Kentucky, Nevada, New Hampshire, North Dakota, Ohio, Vermont and Washington.

The **Sixth Edition** represents this continued evolution in impairment evaluation. Many states require the use of the "most recent Edition" of the *Guides* either by statute or code; States using the Sixth Edition are Alaska, Arizona, Connecticut, Indiana, Louisiana, Massachusetts, Mississippi, Montana, New Mexico, Oklahoma, Pennsylvania, Rhode Island, Tennessee and Wyoming[11]. The most recent edition is also expected to remain the standard for automobile casualty and personal injury cases, both domestically and internationally. Some of the countries abroad that use the *Guides* include Australia, Canada, Hong Kong, Korea, New Zealand, and South Africa.

The Sixth Edition is the new standard for all other cases. Federal workers' compensation laws cover all federal employees (including postal workers) and citizens of Washington, DC. Federal systems include Federal Employees' Compensation Act (FECA), Energy Employees Occupational Illness Compensation Program Act, and Longshore and Harbor Workers' Compensation Act (LHWCA). Under the Federal Employees' Compensation Act (FECA 5 USC 8107) benefit is given for permanent impairment to specific body parts including extremities, hearing, vision, and loss of specific organs. Under the Longshore and Harbor Workers' Compensation Act ratings are performed for "scheduled injuries" (e.g., a scheduled member of the body defined by section 8(c)(1)-(20) of the LHWCA).[12] This includes upper extremity injuries (with the exception of the shoulder), lower extremity injuries, and hearing loss.

The *Guides* are often used to quantify the extent of injuries resulting from an automobile casualty or personal injury. Insurers may use an impairment rating as one of the factors in determining the reserve or settlement value of a claim. Insurers and attorneys may use this as factor considered in quantifying the impact of an injury and the associated case value. In some states, suits under no-fault automobile insurance are limited to cases where a specific defined impairment threshold has been met; in these states the *Guides* play an important role in providing numerical data to indicate that the threshold has indeed been met. In Florida, as an insured's claims for pain and suffering are subject to limits as a basis for recovery outside the automobile no-fault system the *Guides* are used to define permanent loss.

The *Guides* impairment ratings are used in different ways, depending on the type of case and the jurisdiction. Although impairment is a different concept than disability, some jurisdictions use impairment as a proxy for the latter, while others use the impairment rating value in a formula that results in a disability rating. Still other jurisdictions are similar to motor vehicle insurers in using the impairment value as a threshold indicator for a more serious injury or illness.

Challenges and Criticisms of Prior Editions

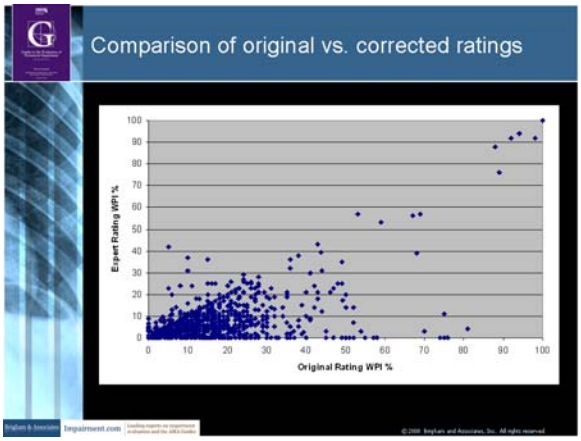
There are many challenges associated with the use of the *Guides*, including criticisms of the *Guides* themselves, the use of impairment rating numbers, and a high error rate.[13] [14] [15] [16] [17] [18] [19] [20] Previous criticisms include:

- Failure to provide a comprehensive, valid, reliable, unbiased, and evidence-based rating system.
- Impairment ratings did not adequately or accurately reflect loss of function.
- Numerical ratings were more the representation of "legal fiction than medical reality."

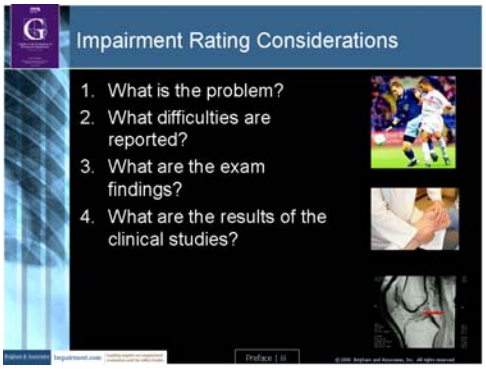
Therefore, the following changes were recommended:

- 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.

Studies have demonstrated poor inter-rater reliability and revealed that many impairment ratings are incorrect, more often rated significantly higher than appropriate.[21] While treating physicians, who by definition are advocates for their patients, have been particularly prone to overrate impairment, physicians who have not been adequately trained in the use of the *Guides* also commonly provide erroneous ratings, with it more common for rating errors to increase rather than decrease ratings.



Sixth Edition Approaches and Developmental Process

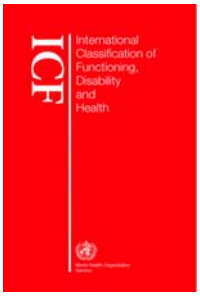


The *Guides* defines the process for evaluating impairment. Clinical discussions among physician colleagues regarding potential severity of an illness or injury typically involve four basic points of consideration:

1) What is the problem (diagnosis)?
2) What symptoms and resulting functional difficulty does the patient report?
3) What are the physical findings pertaining to the problem?
4) What are the results of clinical studies?

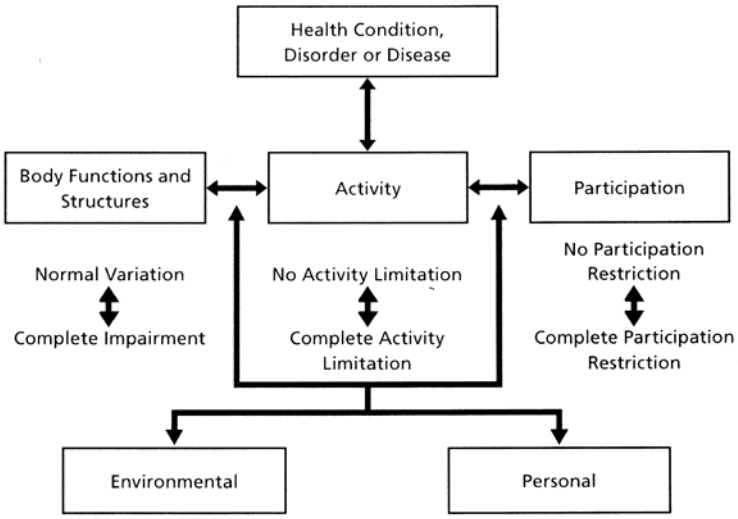
In a similar manner, these same basic considerations are used by the physicians to evaluate and communicate about impairment, although, given the use of ratings as the basis for monetary awards, physicians are always cognizant of the need to be certain that subjective and other objectively nonquantifiable aspects of the clinical presentation are consistent with both the diagnosis and the patient's objective findings. The Sixth Edition expands the spectrum of diagnoses recognized in impairment rating, considers functional consequences of the impairment as a part of each physician's detailed history, refines the physical examination, and clarifies appropriate clinical testing.

International Classification of Functioning, Disability and Health



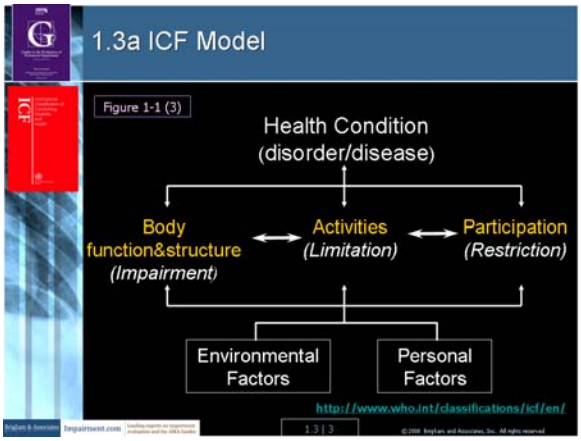
The Sixth Edition uses the framework based upon the **International Classification of Functioning, Disability and Health (ICF), a comprehensive model of disablement developed by the World Health Organization.** This framework, illustrated in Figure 2, is intended for describing and measuring health and disability at the individual and population levels. The ICF is a classification of health and health related domains that describe body functions and structures, activities and participation. The domains are classified from body, individual and societal perspectives. The ICF systematically groups different domains for a person in a given health condition (e.g. what a person with a disease or disorder does do or can do). Functioning is an umbrella term encompassing all body functions, activities and participation; similarly, disability serves as an umbrella term for impairments, activity limitations or participation restrictions. Since an individual's functioning and disability occurs in a context, the ICF also includes a list of environmental factors.

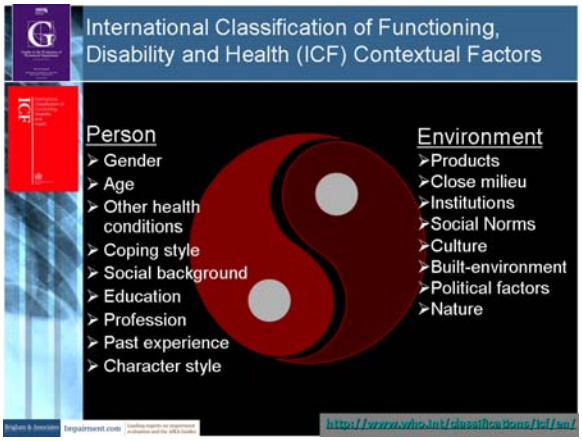
Figure 2. ICF Model of Disablement



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.





The ICF model reflects the **dynamic** interactions between an individual with a given health condition, the environment, and personal factors. Impairment, activity limitations and limitations in participation are not synonymous; an individual may have impairment and significant limitations in most activities but be able to participate in a specific life situation of relevance, have minor impairment and activity limitations with inability to participate in a specific life situation, or any permutation of these three factors.

Use of the ICF model does not indicate that the *Guides* will now be assessing disability rather than impairment. Rather, the incorporation of certain aspects of the ICF model into the impairment rating process reflects efforts to place the impairment rating into a structure that promotes integration with the ICF constructs for activity limitations and limitations in participation, ultimately enhancing its applicability to situations in which the impairment rating is one component of the "disability evaluation process".

Impairment Classes and Diagnosis-based Grids

The ICF classification uses **five impairment classes**, which permits rating of patients who range from having no problems to having significant problems. In the Sixth Edition "diagnosis-based grids" were developed for each organ system. These grids use commonly accepted consensus-based criteria to classify most diagnoses relevant to a particular organ or body part into five classes of impairment severity ranging from Class 0, normal, to Class 5, very severe. The final impairment is determined by adjusting the initial impairment rating given by factors that may include physical findings, the results of clinical tests, and functional reports by the patient. The basic template of the diagnosis-based grid is common to each organ system and chapter; therefore although there is variation in the ancillary factors used to develop the impairment rating (depending on the body part), there is greater internal consistency between chapters than was seen formerly.

This uniform diagnosis-based approach is a significant change from the anatomical approach that was the primary approach with many previous musculoskeletal assessments. However, there are similarities to other approaches used in the Fourth and Fifth Editions. For example, as mentioned previously, spinal impairment assessments have typically been based on the Diagnosis-Related Estimates Method, with specific findings or diagnoses used to assign the patient to a category. In the Fifth Edition the patient is assigned to one of five categories, with the first category having no ratable impairment and the other four categories having four possible impairment values. Thus, a patient with a lumbar radiculopathy would be assigned to a DRE Lumbar Category III which would lead to a whole person impairment rating of between 10% and 13% using the Fifth Edition (choice of a level is based upon the examiner's judgment regarding limitations in activities of daily living (ADLs) as a result of the impairment). Although the Fourth Edition also used the DRE system, there was not an allowance for variation in the impact of a given diagnosis upon ADLs so the rating for Category III was fixed at 10% whole person permanent impairment. Likewise, although lower extremity impairments had been based on thirteen possible approaches in the Fifth Edition, the most commonly used approach is the Diagnosis-Based Estimates where specific impairment values are provided for diagnoses. For example, a patient with a partial medial meniscectomy is assigned 1% whole person permanent impairment. Rating systems previously used for the lower extremity likewise did not provide for adjustments based on functional difficulties, physical examination findings, or the results of clinical studies.

The Preface to the Sixth Edition states that the features of the new edition include [22]:

- A standardized approach across organ systems and chapters.
- 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.

The Sixth Edition reflects movement toward these features; however such change will not be immediately achieved. Thus it should be considered a step in the evolution of the *Guides* rather than as an end point in and of itself.

Development Process

The Sixth Edition process involved many participants – including physicians who use the *Guides* and the staff of the AMA, all of whom were tasked to develop the Sixth Edition in the context of the aforementioned principles. The process was guided by an Editorial Panel and an Advisory Committee, and features an open, well-defined, and tiered, peer review process. The Editorial Panel was established to include a Medical Editor (Robert Rondinelli, MD), five Section Editors (Elizabeth Genovese, MD, Richard Katz, MD, Kathryn Mueller, MD Mohammed Ranavaya, MD, and Tom Mayer, MD), a Senior Contributing Editor (Christopher R. Brigham, MD), and four core Editorial Staff members. The editorial process used an evidence-based foundation when possible, primarily as the basis for determining diagnostic criteria, and a Delphi panel approach to consensus building regarding the impairment ratings themselves. When there was not a compelling rationale to alter impairment ratings from what they had

been previously, consistency of the ratings with those provided in prior editions was the default. The Section Editors led a group of 53 specialty-specific, expert contributors in developing the chapters and in conjunction with the Senior Contributing Editor wrote considerable portions of the revised chapters. The review process involved over 140 physicians, attorneys and other professionals.

An Advisory Committee was developed to provide ongoing discussion of items of mutual concern and current issues in impairment and disability. The group is comprised of numerous representatives from medical specialty societies and experts from certification and teaching organizations and workers' compensation systems. The primary objectives of the Advisory Committee were:

- Serve as a resource to the *Guides* Editorial Panel by giving advice on impairment rating as relevant to the member's specialty.
- Provide documentation to staff and the Editorial Panel regarding the medical appropriateness of changes under consideration for inclusion in the *Guides*.
- Assist in the review and further development of relevant impairment issues and in the preparation of technical education material and articles pertaining to the *Guides*.
- Promote and educate its membership on the use and benefits of the *Guides*.

Sixth Edition Structure

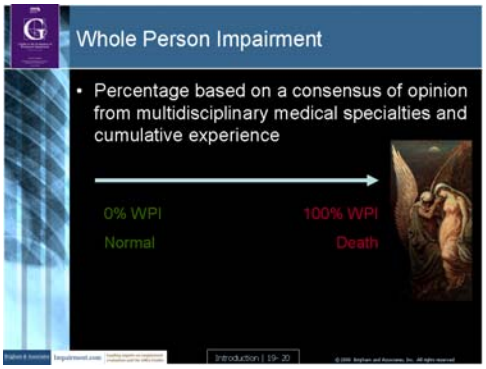
The Sixth Edition is 634 pages in length and is comprised of 17 chapters; it is similar in length to the Fifth Edition (613 pages) and has one less chapter since the Cardiovascular System is now a single chapter. Chapter 1, Conceptual Foundations and Philosophy and Chapter 2, Practical Applications of the *Guides* define the overall approaches to assessing impairment. Most impairment ratings are performed for musculoskeletal painful conditions; therefore the most commonly used chapters will be Chapter 15, The Upper Extremities, Chapter 16, The Lower Extremities, and Chapter 17, The Spine and Pelvis. Chapter 3, Pain-Related Impairment, Chapter 13, The Central and Peripheral Nervous System and Chapter 14, Mental and Behavioral Disorders will also be frequently referenced. Chapters 4 to 12 focus on other organ systems and structures. A comparison of chapters and length is presented in Table 1.

Table 1. Comparison of AMA Guides Chapters: Fourth, Fifth and Sixth Editions

Sixth Edition			Fifth Edition		Fourth Edition	
Chapter	Title	Length	Chapter	Length	Chapter	Length
1	Conceptual Foundations and Philosophy	18	1	15	1	6
2	Practical Application of the *Guides*	12	2	8	2	6
3	Pain	16	18	28	15	12
4	Cardiovascular System	30	3, 4	62	6	32
5	Pulmonary System	24	5	30	5	16
6	Digestive System	28	6	26	10	14
7	Urinary and Reproductive System	30	7	30	11	14
8	Skin	24	8	18	13	14
9	Hematopietic System	30	9	22	7	8
10	Endocrine System	34	10	34	12	14
11	Ear, Nose, Throat, and Related Structures	34	11	32	9	12
12	Visual System	40	12	28	8	14
13	Central and Peripheral Nervous System	26	13	52	4	14
14	Mental and Behavioral Disorders	36	14	16	14	12
15	Upper Extremities	110	16	90	3.1	60
16	Lower Extremities	64	17	42	3.2	19
17	Spine	46	15	60		42
	Total Pages	602		593		309

The most significant change with the Sixth Edition is the development of Impairment Classification Grids based on the ICF model. To appreciate the overall impact of the Sixth Edition it is helpful to summarize the chapters most often referenced, the first two chapters, the musculoskeletal chapters, and the chapters on the nervous system and mental and behavioral disorders.

Impairment Rating Values



The Sixth Edition reflects very substantial change, a change more significant than any prior Edition change. With the Sixth Edition the **impairment values for the most frequently used impairments and diagnoses are similar** to the Fifth. However, some adjustments were required, with certain ratings being lower and others higher. There are conditions that did not receive ratable impairment in the past (such as lateral epicondylitis and non-specific spinal pain) which in certain circumstances may now be ratable as Class 1 (mild) impairments. Sixth Edition ratings are based more on the end-result and the impact on the patient, rather than what types of treatments or surgeries have been performed. Therefore, other ratings (such as spinal fusions) will receive lower ratings.

In assessing the impact of the Sixth Edition it is important to consider whether original or expert ratings are being considered as the baseline. Most impairment ratings performed by the Fourth and Fifth Editions have been shown to be erroneous when these original ratings are reviewed by experts in the use of the AMA *Guides.* Therefore in comparing differences it important to determine the relative change from observed ratings and those that are consistent with the *Guides.*

The full impact of changes in ratings will not be available until a large number of cases have been rated or comparative studies are performed where cases are rated by both the Fifth and Sixth Editions. It is critically important to understand this impact on the systems that make use of the *Guides.*

Comparative studies of ratings performed by the Third Edition, Revised, Fourth Edition and Fifth Edition concluded that the Fourth and Fifth Editions are more complex than the Third Edition, Revised, and, in general, require more effort by rating physicians and result in lower ratings.[23]

Erroneous ratings with prior editions often occurred because unreliable examination findings were used to define impairment. With the Sixth Edition it is probable that the errors will result more from inaccurate diagnoses and misclassification of the Class of impairment. The definition of the Class of impairment is the most significant factor in defining the extent of impairment.

Conclusion

It is probable that it will be several months before physicians, claims professionals, attorneys and fact-finders are familiar with the significant differences in assessing impairment. This learning curve is shortened by training and developing understanding of the evolving methodology. It is hoped that the Sixth Edition will benefit all stakeholders by minimizing conflict and improving decision making; however whether this will occur is not yet known. The process of defining impairment or the complexities of human function is not perfect; however, the Sixth Edition should simplify the rating process, improve accuracy and provide a solid basis for future editions of the *Guides*.

Chapter 1 - Conceptual Foundations and Philosophy

1. Conceptual Foundations and Philosophy

For each Section identify the most important issue for you.

1.1. History of the *Guides*

1.2. New Directions for the Sixth Edition

1.3. The International Classification of Functioning, Disability and Health (ICF): A Contemporary Model of Disablement

1.4. Measurement Issues

1.5. Balancing Science and Clinical Judgment

1.6. The Case for Simplification and Ease of Application

1.7. The Application of Functional Assessment

1.8. The Need for Internal Consistency and a Uniform Template

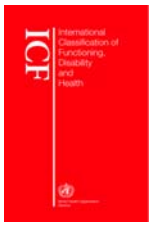
1.9. Summary

Chapter 1, Conceptual Foundations and Philosophy commences with **Section 1.1 - History of the *Guides*** (6th ed., 1 – 2) describing a history of compensation for personal injury and disability that dates to antiquity.

Section 1.2 - New Direction for the Sixth Edition (6th ed., 3), presents previous criticisms of the *Guides* and five new axioms of the Sixth Edition. The Five New Axioms of the Sixth Edition are presented in Table 2.

Table 2. Five New Axioms of the Sixth Edition

1. The Guides adopts the terminology and conceptual framework of disablement as put forward by the International Classification of Functioning, Disability, and Health (ICF).
2. The Guides becomes more diagnosis based with these diagnoses being evidence-based when possible.
3. Simplicity, ease-of-application, and following precedent, where applicable, are given high priority, with the goal of optimizing interrater and intrarater reliability.
4. Rating percentages derived according to the Guides are functionally based, to the fullest practical extent possible.
5. The Guides stresses conceptual and methodological congruity within and between organ system ratings.



The contemporary model of disablement adopted by the Sixth Edition is the **International Classification of Functioning, Disability, and Health (ICF)**, as explained in **Section 1.3** (6th ed., 3 - 6). The traditional model of disablement previously relied upon, the International Classification of Impairments, Disabilities, and Handicaps (ICIDH) presented by the World Health Organization more than a quarter century ago is characterized as a simplistic model providing a unidirectional depiction of the relationship among pathology, impairment, disability and handicap, without recognizing the dynamic relationships among these factors nor the role of important personal and environmental modifiers.

The Sixth Edition defines **impairment** as "**a significant deviation, loss, or loss of use of any body structure or body function in an individual with a health condition, disorder, or disease."** (6th ed., 5) This is more refined than the definition in the Fifth Edition which was "a loss, lose of use, or derangement of any body part, organ system, or organ function." (5th ed., 601); the Sixth Edition includes the term "significant" and then adds the phrase "in an individual with a health condition, disorder, or disease".

Disability is defined as "**activity limitations and/or participation restrictions in an individual with a health condition, disorder, or disease**" (6th ed., 5) reflective of the ICF terminology. The Fifth Edition definition of disability was "alteration of an individual's capacity to meet personal, social or occupational demands, or statutory or regulatory requirements because of an impairment." (5th ed., 600)

Impairment rating is a **physician-provided process that attempts to link impairment with functional loss** and continues to be defined as a "**consensus-derived percentage estimate of loss of activity reflecting severity for a given health condition, and the degree of associated limitations in terms of activities of daily living (ADLs)**". (6th ed., 5)

The Sixth Edition differs in stressing the importance of causation assessment in performing a rating, as it is first necessary to determine if the health condition is related to an allegedly causal event or exposure. This represents a concerted attempt to prevent, or at least reduce, the common error of including factors that are not causally related to an injury in the rating (for example rating spinal degenerative disease not caused by an injury).

Since impairment ratings may be used inappropriately as a direct correlate of disability, the Sixth Edition addresses this issue by explaining:

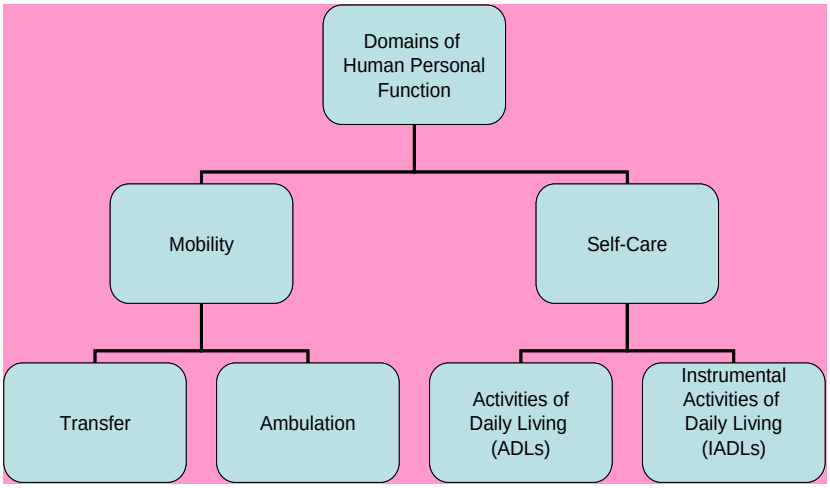
> "The relationship between impairment and disability remains both complex and difficult, if not impossible, to predict. In some conditions there is a strong association between level of injury and the degree of functional loss expected in one's personal sphere of activity (mobility and ADLs). The same level of injury is in no way predictive of an affected individual's ability to participate in major life functions (including work) when appropriate motivation, technology, and sufficient accommodations are available. Disability

may be influenced by physical, psychological, and psychosocial factors that can change over time." (6th ed., 5 – 6)

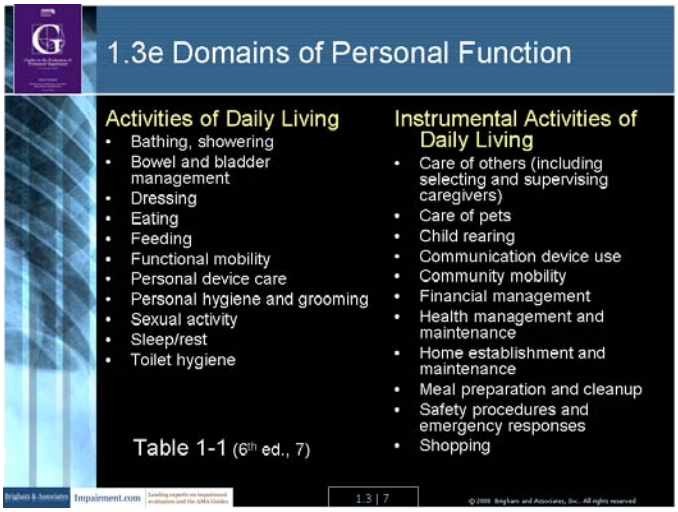
The Sixth edition specifically states, as did prior editions, that "the Guides is not intended to be used for direct estimates of work participation restrictions. Impairment percentages derived according to the Guides' criteria do not directly measure work participation restrictions." (6th ed., 6). Instead it stresses that "the intent of the *Guides* is to develop standardized impairment ratings which involves defining the diagnosis and associated loss at maximum medical improvement, enabling a patient with an impairment rating to exit from a system of temporary disablement, and provide diagnosis and taxonomic classification of impairment as a segue into other systems of long-term disability". (6th ed., 6) In other words, the process of assigning an impairment rating requires the evaluator to clearly delineate the diagnostic criteria (based on the history, including prior clinical course), physical examination findings, current and prior diagnostic test results, and functional status that places the patient in a given impairment class and warrants assignment of a specific number within the options for that class, with the understanding the provision of an impairment rating does not directly equate to a permanent disability rating.

As assessment of the functional ramifications of a given diagnosis is used in assigning (or modifying) impairment ratings, the Sixth Edition facilitates consideration of relevant factors by defining two domains of human personal function: mobility and self-care (illustrated in Figure 3). This definition is new to the *Guides.*

Figure 3. Domains of Personal Function



Mobility involves **transfer** (movement of one's body position while remaining at the same point in space) and **ambulation** (movement of one's body from one point in space to another). The Sixth Edition differentiates **activities of daily living** that relate to self-care performed in one personal sphere bathing and showering, bowel and bladder management, dressing, eating, feeding, functional mobility, personal device care, personal hygiene and grooming, sexual activity, sleep / rest, and toilet hygiene) and **"instrumented" ADLs** that are complex self-care activities (eg, financial management, medications, meal preparation) which may be delegated to others. Mobility and self-care activities may be performed independently or may require adaptive aids or helper assistance. The highest level of independence with which a given activity is consistently and safely performed is considered the functional level for that individual. This concept is critically important since function is a modifier of impairment in the Sixth Edition, and it is therefore important that raters be more precise in asking questions (or using questionnaires) in order to assess the ability to perform activities relevant to an overall assessment of function.



Measurement issues are important factors in defining impairment and are discussed in **Section 1.4** (6th ed., 6 – 8). Previous studies examining the validity of musculoskeletal impairment ratings have revealed equivocal results between impairment rating and functional losses.

The *Guides* attempt to **balance science and clinical judgment**, as explained in **Section 1.5** (6th ed., 8 - 9). Impairment ratings continue to be based largely on consensus and expert opinion since there is not yet adequate methodology or data to relate these ratings to functional loss. The validity of impairment percentages defined in the Sixth Edition must await further empirical testing.

As much as possible the approaches in the Sixth Edition focused on **simplicity and brevity** (**Section 1.6**, 6th ed., 9), although finding an appropriate balance between these goals and providing the information (often complex) required for accuracy and reliability remains difficult.

The Sixth Edition provides **greater weight to functional assessment** than does prior Editions. The full impact of this approach is yet to be determined. **Section 1.7, The Application of Functional Assessment** (6th ed., 9 – 11) discusses earlier approaches that have worked well (such as the New York Heart Association classification). Guidance is then provided on the use of self-report assessment tools and the need for empirical validation through in-office applications. The rating physician is to consider all available information, however there is a clear mandate to evaluate the reliability of the information presented, with it noted that patients may underreport or over-report their difficulties. As the *Guides* are often used in workers' compensation cases and other litigation settings as the basis for monetary awards, over-reporting severity of problems is a common challenge. Therefore the Sixth Edition states that "examiners must exercise their ability to observe the patient perform certain functional tasks to help determine if self-report is accurate." (6th ed., 10). In other words, if the examinee reports loss of certain abilities on a questionnaire or during the clinical interview, the examiner should observe the patient to see if these losses are consistent with the physical examination, diagnostic tests, and/or functional limitations that are "usually" associated with a given disorder; inconsistent and invalid data should not be used to define impairment. The use of functional assessment tools varies by chapter.

Section 1.8, The Need for **Internal Consistency and a Uniform Template** (6th ed., 11 – 16), explains the process used to develop a generic template for impairment grids that could be used across various organ systems to enhance uniformity and consistency. The Five Scale ICF Taxonomy used by the *Guides* is provided in Table 3.

Table 3. Five Scale ICF Taxonomy

Class	Description
0	No problem
1	Mild problem
2	Moderate problem
3	Severe problem
4	Complete (very severe) problem

Impairment percentage ranges are provided for each class; the impairment values are dependent on the organ system and structure. Diagnosis and other historical or clinical information typically serve as the key factor used to place a patient within a specific class, although there are some exceptions. Each class is associated with a corresponding range of available impairment ratings, typically defined into five **impairment grades** (A to E), with the **mid-range grade (C) the default value**. The grade may be modified by non-key findings which may include functional history, physical examination findings, and the results of clinical studies, although whether this occurs depends upon whether these factors fall into the same class as did the initial key factor.

The **structure of a typical diagnosis-based grid** is presented in Figure 4. The grid used for the extremities (which differs in several ways) is presented in Figure 5. Not all chapters use the same key factors, and some chapters use information other than the physical examination, test results, and functional limitations in assigning a specific rating (e.g., the endocrine chapter considers burden of treatment compliance). Nonetheless, the system used in the Sixth edition represents a dramatic change from prior editions, especially with regards to the non-musculoskeletal chapters, as the classes previously were listed as ranges of impairment ratings with little or no specific guidance given regarding how to choose a discreet numerical value to reflect a patient's impairment. This significantly contributed to the lack of interrater (and even intrarater) reliability seen with use of prior editions which should be considerably reduced. The generic system used as the basis for most of the non-musculoskeletal chapters, and that was modified for use in rating the extremities and spine, is as follows:

Figure 4 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

Once the history is used to place a patient into a given impairment class (at the default level of Grade C), the class ratings for other relevant factors (which will differ between body parts and/or organ systems) will be used to shift the rating to a higher or lower grade. The degree to which this occurs will ordinarily be based on the number of classes by which the additional factor is classified as representing a higher or lower impairment than the key factor. For example, if the history is the key factor and places an individual in Class 2, Class 1 physical findings (one below the originally assigned class) will shift the rating down to grade B, and then with Class 4 test results (two above the original class), a net change of + 1 (-1 + 2) results in a final rating in Class 2 – Grade D.

The system used for the spine and extremities differs in that initial placement in the grid used to refine the impairment rating is based upon the diagnosis alone, and then modified based upon the results obtained from matching the patient's clinical presentation to information in additional adjustment grids.

Figure 5. Diagnosis-Based Grid Structure for Extremities

Diagnostic Criteria	Class 0	Class 1	Class 2	Class 3	Class 4
RANGES	0%	1% - 13%	14% - 25%	26% - 49%	50% - 100%
GRADE		A B C D E	A B C D E	A B C D E	A B C D E
Soft Tissue					
(Diagnosis description - general)	No significant objective findings	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition	# # # # # (Diagnosis – specific definition)
(Diagnosis description - general)	No significant objective findings	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition	# # # # # (Diagnosis – specific definition)
Muscle / Tendon					
(Diagnosis description - general)	No significant objective findings	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition	# # # # # (Diagnosis – specific definition)
(Diagnosis description - general)	No significant objective findings	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition	# # # # # (Diagnosis – specific definition)
Ligament / Bone / Joint					
(Diagnosis description - general)	No significant objective findings	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition)	# # # # # (Diagnosis – specific definition	# # # # # (Diagnosis – specific definition)

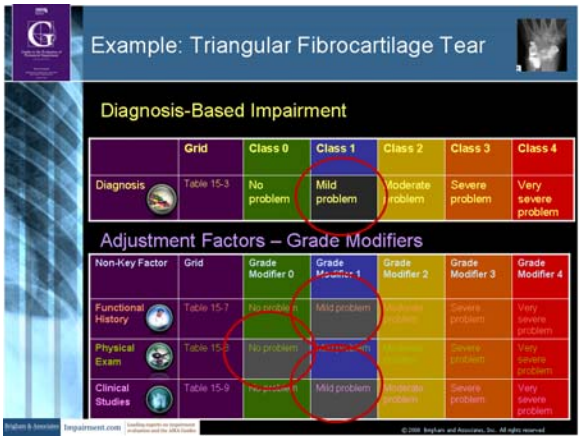
For each of the non-key factors there are definitions of the severity of the findings which reflect the grade modifier (class equivalent) of these findings. This is reflected in a summary in Adjustment Grid: Summary (Figure 6) and tables providing specific definitions for defining the grade modifier values for functional history, physical examination and clinical findings.

Figure 6. Adjustment Grid: Summary

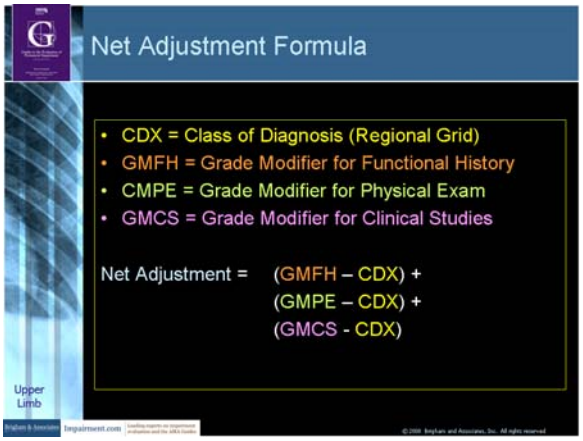
Non-Key Factor	Grade Modifier 0	Grade Modifier 1	Grade Modifier 2	Grade Modifier 3	Grade Modifier 4
Functional History	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Physical Exam	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem
Clinical Studies	No problem	Mild problem	Moderate problem	Severe problem	Very severe problem

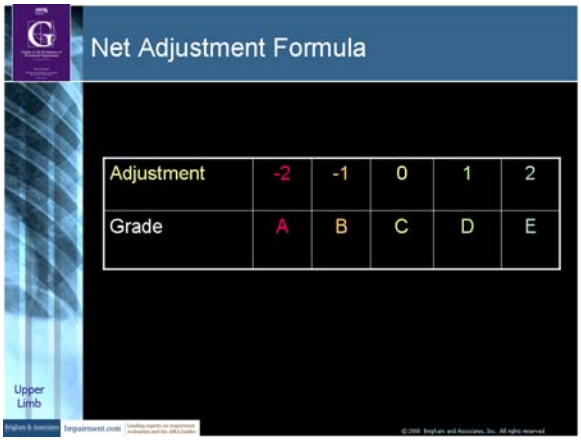
If the grade modifier number of the non-key factors is the same as the class number assigned by diagnosis the default impairment value associated with grade C is used to define the impairment.

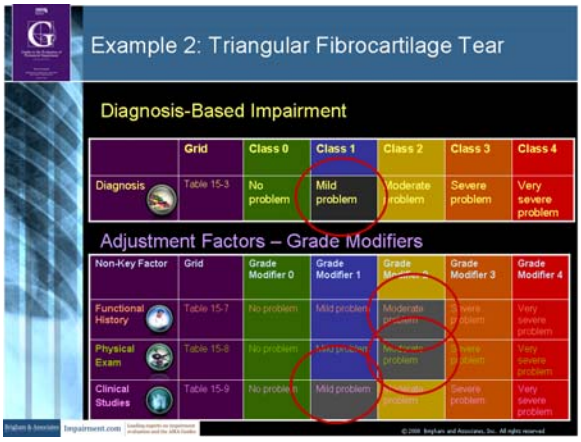
The grade may be adjusted by comparing the relative difference between the class assigned by the key factor and the classes assigned by the non-key factors. Unreliable non-key factors are not used to modify the rating and in the musculoskeletal chapters only the most significant diagnosis for an extremity or spine is modified by functional history. It is probable that some workers' compensation jurisdictions will modify the approach to functional adjustment, either requiring all diagnoses to be modified or prohibiting functional adjustments.

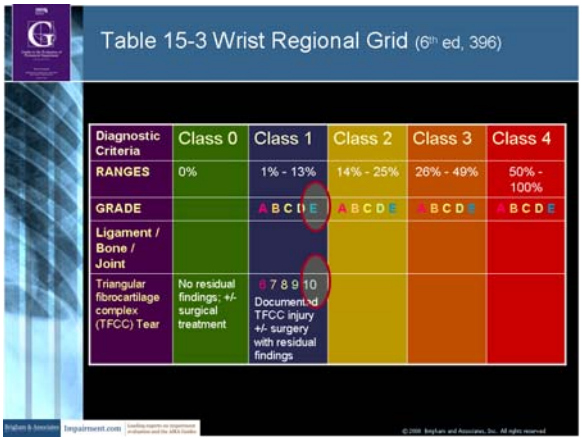


Since Class assignment is made solely by the diagnosis and associated clinical information, and that non-key factors will not result in impairment lower or higher than the values associated with that condition, appropriate Class assignment is the most critical factor. With Fourth and Fifth Editions it appears that some patients and raters attempt to inflate rating by reporting findings that result in higher ratable impairment, such as demonstrating less joint motion or less strength than actually exists. With the Sixth Edition it is more likely that controversies will result from the interpretation of diagnoses and clinical information that results in Class assignment since this will have more dramatic impact on the impairment values. For example, with spinal impairment assessments it will be important to determine the significance of disk herniations and radiculopathy, two of the critical factors that define the impairment class.









Chapter 2 – Practical Applications of the Guides

For each Section identify the most important issue for you.

2. Practical Application of the Guides

2.1. Use of the *Guides* in Workers' Compensation and Other Disability Systems

2.2. Organ Systems and Whole Body Approach to Impairment Ratings

2.3. Use of the *Guides*

2.4. Rules of Application for the *Guides*

2.5. Concepts Important to the Independent Medical Examiner

2.6. Impairment Evaluation and the Law

2.7. Preparing Reports

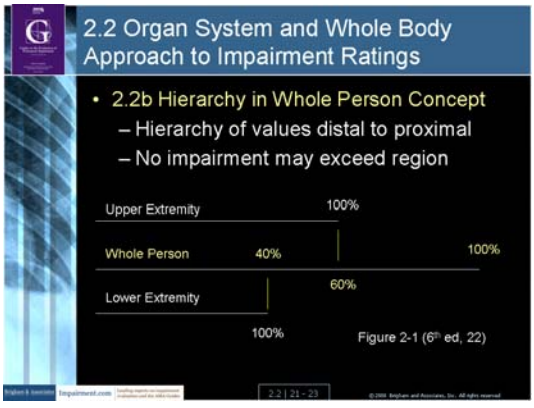
Chapter 2, Practical Applications of the *Guides* outlines the key concepts, principles, and rationale underlying the application of the *Guides*, therefore it is essential that all participants understand this content. With prior Editions erroneous ratings often occur as a result of physicians failing to follow rules defined in Chapter 2. Fourteen fundamental principles are defined and many of these principles have significant impact on the rating process. These principles are summarized in Table 4.

Table 4. Summary of Fundamental Principles (based on Sixth Edition Table 2-1, 6th ed, 20)

1. Chapter 2 preempts everything in subsequent chapters that conflicts with or compromises the principles.
2. No impairment may exceed 100% whole person permanent impairment nor may impairment extend the maximum assigned to an organ or extremity,
3. All regional impairments are combined at the same level first and then regional impairments are combined at the whole person level,
4. Impairments must be rated per the chapter relevant to the organ or system where the injury primarily arose or where the greatest dysfunction remains,
5. Only permanent impairment may be rated and only after maximum medical improvement is certified,
6. A licensed physician must perform impairment evaluations and chiropractic doctors should restrict ratings to the spine,
7. Valid impairment evaluation report must contain the three step approach of clinical evaluation, analysis of findings, and discussion of how the impairment rating was calculated,
8. The evaluating physician must use knowledge, skill, and ability generally accepted by the medical scientific community when evaluating an individual, to arrive at the correct impairment rating,
9. The *Guides* are based on objective criteria and if findings conflict with established medical principles they cannot be used to justify an impairment rating,
10. Motion and strength determinations should be assessed carefully for self-inhibition,
11. Ratings of future impairment are not provided,
12. If there is more than one method to define impairment, the method producing the higher rating must be used,
13. Subjective complaints alone are generally not ratable,
14. Impairment ratings are rounded to the nearest whole number.

The wide **use of the *Guides* in workers' compensation and other disability systems** is discussed in **Section 2.1 (**6th ed., 20 – 21).

Section 2.2 (6th ed., 21 – 23) explains the **concept of the whole body approach to impairment ratings**. Although most ratings are provided as whole person permanent impairments, some jurisdictions require regional impairment values, and these continue to be supplied in order to serve the needs of these jurisdictions. The hierarchical relationship of extremity ratings to whole person ratings remains with total loss of the upper extremity equaling 60% whole person permanent impairment and total loss of the lower extremity equaling 40% whole person permanent impairment. The approach to combining impairment values using the Combined Values Chart remains the same, however specific guidance is now provided for circumstances when multiple impairments are combined, with it stated that the largest values must be combined first. This is consistent with the approach used in the California Permanent Disability Rating Schedule; however, this is a change from directives provided in the Fifth Edition in Chapter 16, The Upper Extremities, in Section 16.1c Combining Impairment Ratings (5th ed., 438). Duplication and/or inflation of a rating by combining ratings that rely on a similar underlying factor is not permissible and is avoided by careful consideration of the underlying pathophysiology.



The **use of the *Guides*** is explained in **Section 2.3** (6th ed., 23 - 24). As noted previously, the most important element is the physician's accurate diagnosis, particularly since this defines the class of impairment. Impairment rating by analogy is only permitted if there is no other method for rating objectively identifiable impairment. Although impairment ratings are performed by physicians, nonphysician evaluators may analyze an impairment

evaluation to determine if it was performed appropriately. The physician's role is to provide an independent, unbiased assessment; treating physicians are not totally independent. They also may not necessarily have received adequate training in the use of the *Guides*. Therefore assessments by treating physicians may be subject to greater scrutiny than those provided by independent physicians or those with extensive training in the use of the *Guides*. Impairment ratings are only performed at maximum medical improvement.

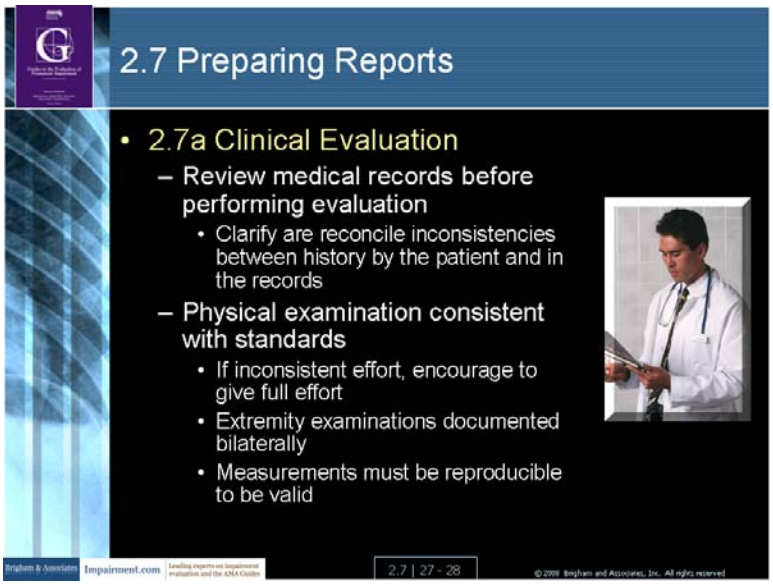
The **rules of application** for the *Guides* presented in **Section 2.4** (6th ed., 24 - 25) are similar to those in prior Editions and essentially reiterate the fundamental principles and the need to base ratings on consistent objective criteria, impairment values may be rounded, while also noting that impairment ratings in the body organ system chapters make allowance for most of the functional losses accompanying the use of prosthetic and similar devices. The Sixth Edition explicitly advises the physician to assess if an individual must regularly use a prosthesis, orthosis, or other assistive device and then test and evaluate the organ system with that device. If the device is easily removed the physician does have the option of reporting findings with and without the device.

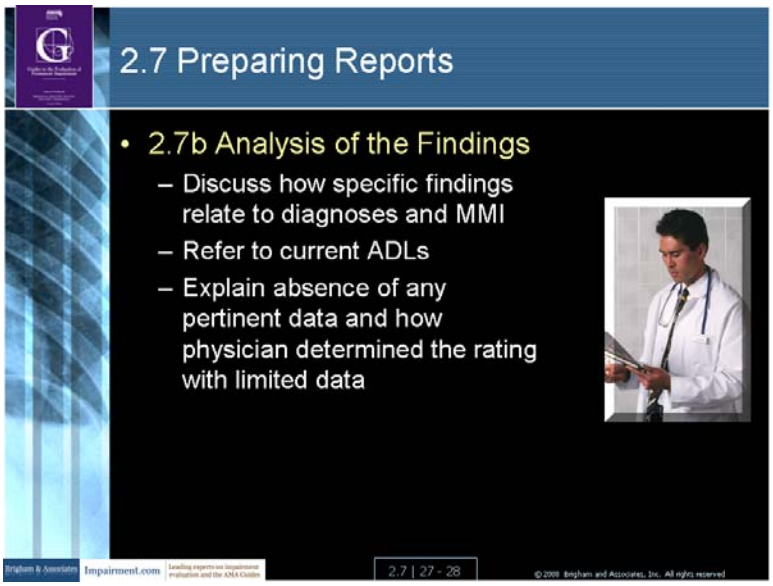
Section 2.5 (6th ed., 25 - 27) presents **concepts important to the independent medical examiner** including definitions of medical possibility vs. probability, causation, exacerbation, aggravation and apportionment. The process of apportionment is the same as previous editions in which the examiner determines the current total impairment rating (all-inclusive) and subtracts the baseline rating reflecting pre-existing impairment. Apportionment requires careful analysis of the alleged causative factors and may be challenging when ratings have been performed using different Editions. This may be particularly challenging with the Sixth Edition since the approaches used to define impairment may differ from earlier editions. If impairment was defined previously and there has been further injury of the same region, it may be appropriate to subtract that previous impairment number from the current rating by the Sixth Edition. In most circumstances the most appropriate method is to rate both the current total impairment and the pre-existing impairment (using clinical information about that condition prior to the more recent injury) by the Sixth Edition.

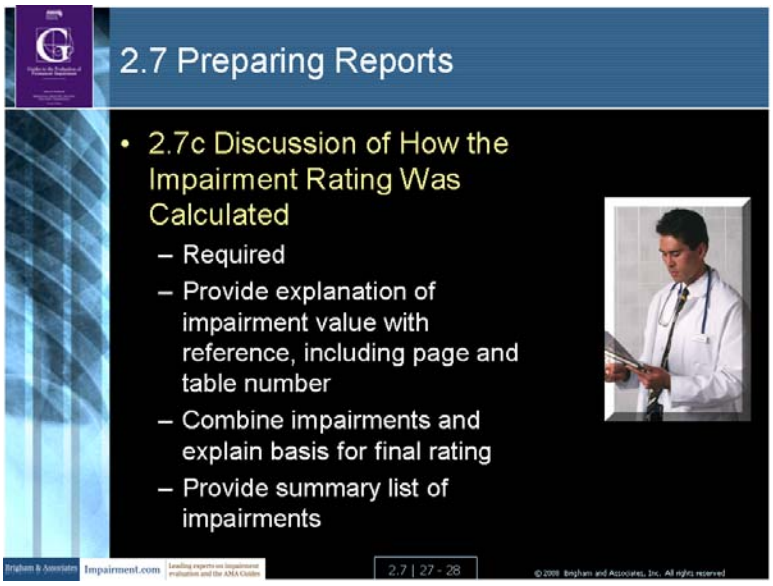
In this edition maximum medical improvement (MMI) refers to "a status where patients are as good as they are going to be from the medical and surgical treatment available to them. It can also be conceptualized as a date from which further recovery or deterioration is not anticipated, although over time (beyond 12 months) there may be some expected change." (6th ed., 26). With prior conditions typically the factors that result in potentially ratable impairment decrease over time as the patient heals. Therefore rating prematurely typically inflates ratings. With the Sixth Edition diagnoses may be modified by the time the patient is at MMI, therefore it is again necessary to assure the patient is at MMI prior to rating. The *Guides* does not permit the rating of future impairment. This edition presents a brief new discussion of the significance of cultural differences that may impact the evaluation process.

An impairment evaluation is a form of expert testimony, as explained in Section 2.6, **Impairment Evaluation and the Law (**6th ed., 27 - 28). Therefore ratings must be fully supportable. If findings or impairment estimates based on these findings conflict with established medical principles they cannot be used to justify an impairment rating.

The **standards for reports** are provided in **Section 2.7** (6th ed., 28 - 29), including clinical evaluation, analysis of findings, and discussion of how the impairment rating was calculated. This continues to serve as an excellent basis to determine the quality of an impairment evaluation report.







Chapter 3 - Pain-Related Impairment

Chapter 3, Pain-Related Impairment (6th ed., 31 – 46) discusses the challenges and controversies associated with assessing pain. **If pain accompanies objective findings of injury or illness that permits rating using another chapter in the Guides, than pain related impairments are not permitted to serve as add-ons.** The clear language to this effect should reduce a common problem of double-dipping seen with the Fifth Edition, i.e. rating for a musculoskeletal condition and then providing further impairment for pain. Therefore it is probable that impairment ratings for pain will be less frequent with the Sixth Edition.

Pain not accompanied by objective ratable findings may be ratable resulting in a maximum of 3% whole person permanent impairment, the same limit assigned in the Fifth Edition. The actual impairment is based on the patient's self-reports on a Pain Disability Questionnaire (PDQ) with a lowering of the impairment if the examiner questions the credibility of the patient. Due to the subjective nature of pain and differing philosophies, this chapter was one of the most controversial. Although there was discussion of modifying the magnitude of the impairment due to pain, lacking compelling information to change from the precedence established in the Fifth Edition, the **maximum rating of 3% whole person permanent** remains. It is probable that the approach to pain-related impairment will continue to evolve with the Seventh Edition.

Chapter 15 – The Upper Extremities

15. The Upper Extremities

For each Section identify the most important issue for you.

15.1. Principles of Assessment

15.2. Diagnosis-Based Impairment

15.3. Adjustment Grid and Grade Modifiers: Non Key Factors

15.4. Peripheral Nerve Impairment

15.5. Complex Regional Pain Syndrome Impairment

15.6. Amputation Impairment

15.7. Range of Motion Impairment

15.8. Summary

15.9. Appendix

Chapter 15, The Upper Extremities (6th ed., 383 – 492) is the longest and most complex chapter, reflective of the complexities involved functionally with the upper limb and the type of injuries encountered. This chapter incorporates the following changes: (1) International Classification of Functioning, Disability, and Health (ICF) Model of Functioning and Disability is used to provide a common basis for the description of human functioning and impairments, (2) principles of assessment have been simplified and clarified, (3) specific diagnosis-based rating tables for the most common injuries and diagnoses have been added, (4) physical examination has been simplified, (5) functional assessment is provided through focused history-taking including information about activities of daily living (ADLs) and a functional assessment tool, (6) criteria for diagnosis of complex regional pain syndrome (CRPS) have been updated for consistency with current standards and other chapters, and (7) an Upper Extremity Impairment Evaluation Record is provided as a template to simplify recording of the evaluation.

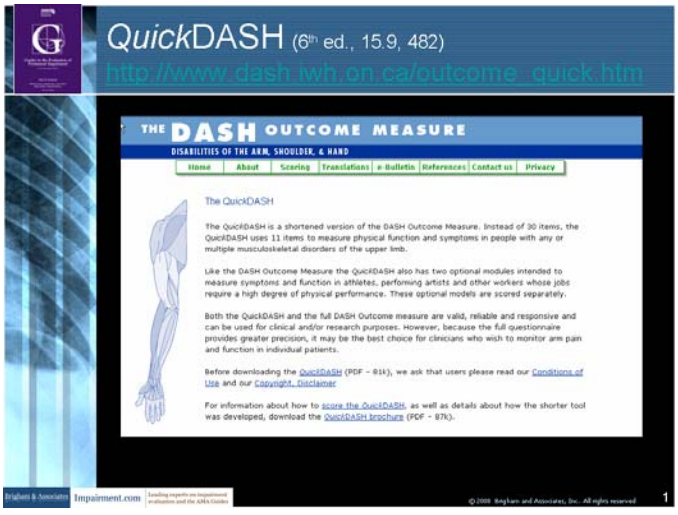
The **principles of assessment** are provided in **Section 15.1** (6th ed., 385 – 386), and this defines the critical standards for interpreting symptoms and signs, functional history, physical examination and clinical studies. It is imperative that both evaluating physicians and those impacted by these ratings fully understand what is required.

Functional history is obtained to determine the impact of a given condition on the basis of functioning of the limb for activities of daily living and results in assignment in to one of five grade modifiers as illustrated in Table 5.

Table 5. Functional History Grade Modifiers – Upper Extremity

Grade Modifier	Interference
0	None demonstrable
1	vigorous or extreme use of the limb only
2	regular use of the limb for ADLs but helper assistance (ie, assistance of another person) is not required.
3	minimal use of the limb for ADLs and some helper assistance (ie, assistance of another person) are required.
4	all use of the limb precludes activity or requires total assistance for some or all ADLs.

The ***Quick*DASH** is a functional assessment tool that may be used to further evaluate this parameter.[24] The QuickDASH is a shortened version of the DASH (Disabilities of the Arm, Shoulder, and Hand); both are the shared property of the Institute for Work & Health (IWH) and the American Academy of Orthopaedic Surgeons (AAOS). The QuickDash is available at **http://www.dash.iwh.on.ca/outcome_quick.htm** Cross-validation of reports of functional ability can occur by observing the patient perform simple routine tasks, such as writing, opening a jar, buttoning a shirt and tying shoes. The inclusion of functional history as an adjustment factor is controversial, however it less likely to be as problematic as some may envision since its use is limited to a non-key adjustment factor, if it is unreliable then it is not used in modifying a rating, and the functional history grade modifier is applied only to the single, highest diagnosis-based impairment (DBI).



Standards for the **physical examination** are provided to assure more reliable ratings and to avoid some of the problems occurring with ratings performed by earlier editions. For example, the opposite extremity should be used to define normal for that individual if it is uninvolved and uninjured. More objective findings, such as atrophy, are given preference over findings that are under the control of the examinee, such as reports of tenderness and motion. The Grade Modifier for physical examination findings is defined by the most significant finding. It is probable that there will be disagreements about the significance of findings, however since this serves as a non-key factor adjustment, this disagreement will have less impact on the final rating compared to previous Editions of the *Guides.*

Most upper extremity impairments are based on **Diagnosis-Based Impairments**, as explained in **Section 15.2** (6th ed., 387 – 404). The upper extremity is divided into **four regions:**

1. **digits / hand**
2. **wrist**
3. **elbow**
4. **shoulder**

Diagnoses are defined in **three major categories:**

1. **soft tissue**
2. **muscle / tendon**
3. **ligament / bone / joint**

The definition of impairment classes and corresponding ranges of impairment for upper extremities and lower extremities are provided in Table 6.

Table 6. Extremities Impairment Classes

Class	Problem	Extremity Impairment Range	Upper Extremity Conversion to Whole Person	Lower Extremity Conversion to Whole Person
0	No objective findings	0%	0%	0%
1	Mild	1% - 13%	1% - 8% WPI	1% - 5% WPI
2	Moderate	14% - 25%	8% - 15% WPI	6% - 10% WPI
3	Severe	26% - 49%	16% - 29% WPI	11% - 19% WPI
4	Very severe	50% - 100%	30% - 60% WPI	20% - 40% WPI

The results of the evaluation should be recorded in Figure 15-2 **Upper Extremity Impairment Evaluation Record (**6th ed., 388). The consistent use of the report forms will improve reliability of ratings. Each impairment rating involves the use of a regional grid (Table 15-2 Digit, 6th ed., 391 – 394; 15-3 Wrist, 6th ed., 395 – 397; 15-4 Elbow, 6th ed., 398 – 400; or 15-5 Shoulder, 6th ed., 401 - 405) and adjustment grids (Tables 15-6 to 15-9, 6th ed., 406 - 411). The use of the Adjustment Grid and grade modifiers (non-key factors) is explained in Section 15.3 (6th ed., 405 – 419). Surgery typically does not define impairment; rather the impairment is based on the resulting diagnosis, modified by the findings at maximum medical improvement.

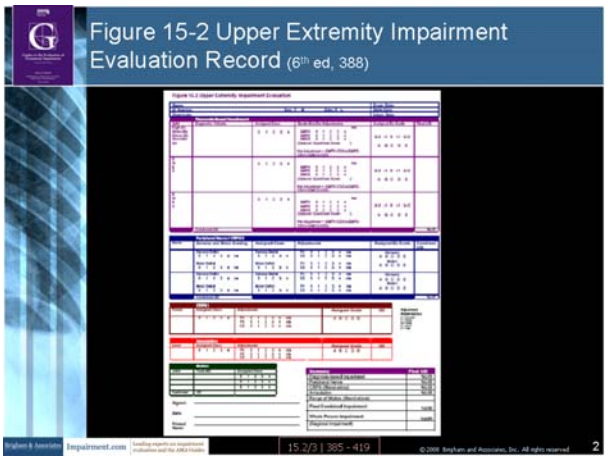


Table 7 provides examples of some of the more common upper extremity diagnoses and the associated class definitions and default impairment values.

Table 7 Examples of Upper Extremity Diagnosis-Based Impairments

Table	Region	Category	Diagnosis	Class	A	B	C Default	D	E
15-2	Digit	Muscle / tendon	Symptomatic trigger finger +/- surgery. Persistent triggering with normal motion	1	4% Digit	5% Digit	6% Digit	7% Digit	8% Digit
15-2	Digit	Ligament / bone / joint	Joint dislocation or sprain; finger PIP; 10º - 20º instability	2	14% Digit	14% Digit	15% Digit	16% Digit	17% Digit
15-3	Wrist	Ligament / bone / joint	Wrist sprain h/o, including carpal instability. Mild instability (grade modifier 1 per radiographic studies and criteria in Table 15-9)	1	6% UE	7% UE	8% UE	9% UE	10% UE
15-3	Wrist	Ligament / bone / joint	Fracture, residual symptoms, consistent objective findings and/or functional loss, with normal motion	1	1% UE	2% UE	3% UE	4% UE	5% UE
15-3	Wrist	Ligament / bone / joint	Wrist (total) arthroplasty with normal motion	2	20% UE	22% UE	24% UE	25% UE	25% UE
15-4	Elbow	Muscle / tendon	Epicondylitis: lateral or medial; s/p surgical release of flexor or extensor origins with residual symptoms	1	3% UE	4% UE	5% UE	6% UE	7% UE
15-5	Shoulder	Muscle / tendon	History of painful injury or occupational exposure, residual symptoms without consistent objective findings (this impairment can only be given once in an individual's lifetime)	1	0% UE	1% UE	1% UE	2% UE	2% UE
15-5	Shoulder	Ligament / bone / joint	Impingement syndrome; residual loss, functional with normal motion	1	1% UE	2% UE	3% UE	4% UE	5% UE
15-5	Shoulder	Ligament / bone / joint	Total shoulder arthroplasty, implant with normal motion	2	20% UE	22% UE	24% UE	25% UE	25% UE

In prior editions range of motion assessments were problematic: there is inadequate support for correlation between motion findings and function[25] and motion assessments were often unreliable. In this edition, joint motion is used primarily as a physical examination adjustment factor and only to determine actual impairment values in the rare case when it is not possible to otherwise do so. Another very significant change is omission of strength measurements as a basis to rate impairment due to serious problems with lack of reliability; they are only used in assessing the motor deficit of a nerve injury. The inappropriate inclusion of grip strength loss in Fourth and Fifth Edition ratings as an ancillary factor in rating impairment (as opposed to as a stand-alone criterion, and only when certain conditions have been met) is a common error that is resolved in the Sixth Edition since it no longer appears as a criterion.

Conversion charts (Tables 15-11 and 15-12, 6th ed., 420 - 423) are provided that permit direct conversion of regional impairments to more distal impairments and whole person impairments.

Case examples are useful in learning how to rate per Diagnosis-based Impairments. An example of a rating of a wrist injury is provided in Figure 7.

Figure 7. Upper Extremity Diagnosis-based Impairment Example

A patient sustains a wrist injury resulting in a triangular fibrocartilage tear which is surgically treated. The patient reports improvement however continues to complain of localized tenderness. At maximum medical improvement the patient reports symptoms with strenuous activity and the ability to perform self-care activities independently. The *Quick*DASH score is 30. Physical examination is unremarkable except for reported localized tenderness and an MRI confirmed the diagnosis and reflected mild pathology.

The diagnosis of "triangular fibrocartilage complex (TFCC) tear" is found in Table 15-3, Wrist Regional Grid: Upper Extremity Impairments (6th ed., 396) and the specific criteria of "documented TFCC injury

+/- surgery with residual findings" results in assignment to Class 1 with associated impairment values of 6%, 7%, 8%, 9% and 10% upper extremity impairment. Grade C the default mid-range impairment value is 8% upper extremity impairment. The functional history and the *Quick*DASH score are consistent with a Grade Modifier 1 per Table 15-7 Functional History Adjustment: Upper Extremities (6th ed., 406); the physical examination is consistent with Grade Modifier 1 on the basis of "minimal palpatory findings, consistently documented, without observed abnormalities" per Table 15-8 Physical Examination Adjustment: Upper Extremities (6th ed., 408), and the clinical studies are also consistent with Grade Modifier 1 on the basis of "clinical studies confirm diagnosis, mild pathology" per Table 15-9 Clinical Studies Adjustment: Upper Extremities (6th ed., 410). All the non-key factor adjustment factors are Grade Modifier 1 which is consistent with the Class 1 designation for the diagnosis; therefore the impairment value remains at the default of Grade C with an associated 8% whole person permanent impairment.

If hypothetically the patient had reported functional difficulties consistent with Grade Modifier 2 (i.e. "pain / symptoms with normal activity" and "able to perform self-care activities with modification by unassisted") and the other adjustment modifiers remains as Grade Modifier 1, then the net adjustment would be one grade higher with the assignment of grade D and 9% upper extremity impairment.

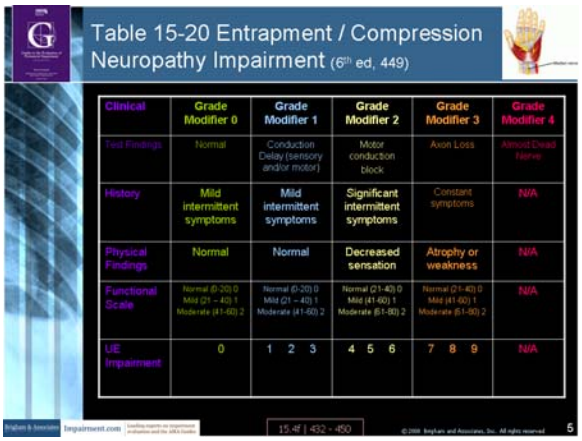
Several rating examples are provided in the Section 15.3e Upper Extremity Diagnosis-based Impairment Examples (6th ed., 413 – 418); Table 8 illustrates the resulting whole person impairment values associated with these examples and the probable impairments based on the Fifth Edition.

Table 8 Examples of Upper Extremity Diagnosis-Based Impairments

Example	Region	Class	Diagnosis	Sixth Edition Impairment (WPI %)	Fifth Edition Impairment (WPI %)
15-1	Digit	0	Stenosing tenosynovitis, resolved with surgery	0%	0%
15-2	Digit	1	Fracture metacarpal	1%	0%
15-3	Digit	1	Stenosing tenosynovitis, symptomatic	1%	2%
15-4	Digit	2	Distal interphalangeal joint dislocation, reduced	2%	3%
15-5	Wrist	0	Contusion	0%	0%
15-6	Wrist	1	Ganglion cyst	2%	0%
15-7	Wrist	3	s/p Wrist Fusion	17%	18%
15-8	Elbow	0	Lateral epicondylitis	0%	0%
15-9	Elbow	1	Distal biceps tendon rupture	4%	6%
15-10	Shoulder	1	Nonspecific shoulder pain	1%	0%
15-11	Shoulder	1	Status post rotator cuff repair	4%	3%
15-12	Shoulder	2	Total shoulder arthroplasty	13%	14%
Average				4%	4%

This table represents only a small sampling of upper extremity impairment cases and is not necessarily reflective of the impairment rating values that will be observed, however the ratings obtained between the two Editions are overall very similar.

Section **15.4** (6th ed., 419 - 450) **Peripheral Nerve Impairment** assesses impairments of digital nerves, brachial plexus, peripheral nerves, and entrapment syndromes. Enhanced standards are provided for clinical evaluation and interpretation of electrodiagnostic studies. Brachial plexus and peripheral nerve traumatic injuries are rated on the basis of assignment to ICF Classes based on the nerve involved and the extent of the sensory and motor deficits, with the final impairment based on Table 15-20 Brachial Plexus Impairment: Upper Extremity Impairments (6th ed., 434-435) and Table 15-21 Peripheral Nerve Impairment: Upper Extremity Impairments (6th ed., 436-444), as opposed to the prior process of multiplying a sensory and/or motor deficits against the maximum value to a nerve.



The approach to **entrapment neuropathy** (i.e. focal neuropathy syndromes such as carpal tunnel, cubital tunnel syndrome) is separate of the process of rating other peripheral nerves and is a very significant change from prior Editions. Only electrodiagnostically confirmed entrapment cases are ratable. The rating is based on Table 15-23 Entrapment / Compression Neuropathy Impairment (6th ed., 449) on the basis of electrodiagnostic test findings, history (extent of symptoms), physical findings and score on *Quick*DASH. The maximum impairment is 9% upper extremity impairment (equivalent to 5% whole person permanent impairment). In the past two years 200 cases of carpal tunnel syndrome were reviewed by Brigham and Associates, Inc., and the mean rating original rating was 10.5% whole person permanent impairment and when corrected, the average rating was 3.4% whole person permanent impairment. Therefore, it is probable that this new maximum will not affect impairment assessments that have been performed correctly; however it will reduce higher ratings seen with erroneous evaluations.

Complex regional pain syndrome (CRPS) is a challenging and controversial concept that is dealt with in **Section 15.5** (6th ed., 450 – 454). CRPS is difficult to diagnose accurately, and epidemiological studies indicate that most such diagnoses are made within a workers' compensation context; therefore, this is a particularly challenging diagnosis to rate. CRPS is only rated when the diagnosis is confirmed by defined objective parameters (present at the time of the rating), the diagnosis has been present for at least one year and verified by more than one physician, and other etiologies (physical and psychological) have been excluded. If these criteria are met, then adjustment factors (functional history, physical examination findings, and clinical studies are defined) and the number of "objective diagnostic criteria points" (Table 15-25, 6th ed., 453) are used in Table 15-26 (6th ed., 454) to define the Class and magnitude of impairment. This same approach is used in the lower extremity chapter.

Amputation impairment, presented in **Section 15.6** (6th ed., 454 – 459), may be based on traditional definitions of amputation level or Table 15-29 Amputation Impairment (6th ed., 460). Table 15-29 defines Classes of impairment with an associated range of impairments; the final impairment is modified as are Diagnosis-based Impairments by non-key factors of functional history, physical examination (proximal findings) and clinical studies. It is not possible to decrease impairment below the value associated with an amputation level, however proximal problems may increase the impairment.

Range of motion determination has a strong historical perspective and continues to be an essential component of upper extremity assessment; however its role is primarily as a physical examination adjustment factor. It is used as a stand-alone rating when the diagnosis-based impairment is not applicable and certain less common situations, as explained in **Section 15.7 Range of Motion Impairment** (6th ed., 460 – 478). The ICF model of impairment is also applied to Range of Motion with grade modifier severity based on reductions of motion from normal for that individual (by comparing the injured extremity to the uninvolved, uninjured opposite side); mild severity is 60% to 90% of normal motion, moderate is 30% to 60%, severe is <30% and very severe is ankylosis. Normative values are provided in tables, rather than in pie charts appearing in prior editions. Misreading pie charts often resulted in upper extremity impairment rating errors. Bilateral motion findings are recorded on Figure 15-13 Upper Extremity Range of Motion Record (6th ed., 462 – 463); this should be completed for all range of motion impairment assessments. Minor adjustments for functional history can be made when reliable functional deficits exceed the defined grade severity.

Section **15.8 Summary** (6th ed., 478 – 481) provides an example of rating multiple upper extremity impairments and summarizes the steps.

Section 15.9 Appendix (6th ed., 482 – 492) provides further information on Functional Assessment Inventories (including use of the *Quick*DASH) and standards for Electrodiagnostic Evaluation of Entrapment Syndromes.

Chapter 16 - Lower Extremities

For each Section identify the most important issue for you.

16. The Lower Extremities

16.1. Principles of Assessment

16.2. Diagnosis-Based Impairment

16.3. Adjustment Grid and Grade Modifiers: Non Key Factors

16.4. Peripheral Nerve Impairment

16.5. Complex Regional Pain Syndrome Impairment

16.6. Amputation Impairment

16.7. Range of Motion Impairment

16.8. Summary

16.9. Appendix

The approaches in **Chapter 16, The Lower Extremities**, (6th ed., 493 – 556) are consistent with Chapter 15 – Upper Extremities; however there is a smaller spectrum of diagnoses with the lower extremities and therefore the chapter is less complex and shorter. The purpose of the lower extremity is transfer and mobility, and in comparison to the upper extremity more importance is given to stability than flexibility. The changes listed in the Introduction to the chapter are the same as appears in Chapter 15.

Section 16.1 Principles of Assessment(6th ed., 494 – 496) defines the standards for interpreting symptoms and signs, functional history, physical examination and clinical studies. The **American Academy of Orthopaedic Surgery Lower Limb Instrument**[26] may be used as an adjunct to defining functional ability; however values are not provided to define a specific grade modifier.

Most lower extremity impairments are based on **Diagnosis-Based Impairments**, as explained in **Section 16.2** (6th ed., 497 – 515).

The lower extremity is divided into three regions:

1. **foot / ankle**
2. **knee**
3. **hip**

As with the Upper Extremities, diagnoses are defined in three major categories:

1. **soft tissue**
2. **muscle / tendon**
3. **ligament / bone / joint**

The results of the evaluation are recorded in Figure 16-2 Lower Extremity Impairment Evaluation Record (6th ed., 498). Each impairment rating involves the use of a regional grid:

- **Foot and Ankle, Table 16-2 (6th ed., 501 – 508)**
- **Knee, Table 16-3 (6th ed., 509 – 511)**
- **Hip, Table 16-4 (6th ed., 512 – 515)**

The use of the Adjustment Grid and grade modifiers (non-key factors) is explained in Section 16.3 (6th ed., 515 – 531). The Functional History adjustment is based primarily on gait derangement, as illustrated in Table 16-6 (6th ed., 516). As with the upper extremity, the impairment is based on the diagnosis and final outcome rather than treatment performed, motion is primarily used as a physical examination adjustment factor, and strength is not used for ratings with the exception of grading the motor deficit of a nerve injury.

Table 16-10, Impairment Values Calculated From Lower Extremity Impairment (6th ed., 530 – 531) provides conversion of lower extremity impairments to foot / ankle and toes.

Table 9 provides examples some of lower extremity diagnoses and the associated class definitions and default impairment values.

Table 9 Examples of Lower Extremity Diagnosis-Based Impairments

Table	Region	Category	Diagnosis	Class	A	B	C Default	D	E
16-2	Foot and Ankle	Muscle / tendon	Strain; tendonitis; or h/o ruptured tendon*, specifically involving posterior tibial, anterior tibial, Achilles, or peroneal tendon; palpatory findings and/or radiographic findings	1	0% LE	1% LE	1% LE	2% LE	2% LE
16-2	Foot and Ankle	Ligament / bone / joint	Fracture / dislocation, tibia (extra-articular), mild motion deficits and/or mild misalignment	1	3% LE	4% LE	5% LE	6% LE	7% LE
16-2	Foot and Ankle	Ligament / bone / joint	Ankle fusion, neutral position	1	7% LE	8% LE	10% LE	12% LE	13% LE
16-3	Knee	Soft Tissue	Bursitis, plica, n/o contusion, or other soft-tissue lesion; significant consistent palpatory findings and/or radiographic findings	1	0% LE	1% LE	1% LE	2% LE	2% LE
16-3	Knee	Ligament / bone / joint	Meniscal injury, partial (medial or lateral) meniscectomy, meniscal tear, or meniscal repair	1	1% LE	2% LE	1% LE	2% LE	3% LE
16-3	Knee	Ligament / bone / joint	Primary knee joint arthritis, 3 mm cartilage interval, full thickness articular cartilage defect, or ununited osteochondral fracture	1	5% LE	6% LE	7% LE	8% LE	9% LE
16-3	Knee	Ligament / bone / joint	Total knee replacement, good result (good position, stable, functional)	2	21% LE	23% LE	25% LE	25% LE	25% LE
16-4	Hip	Ligament / bone / joint	Fracture, femoral neck, intertrochanteric, or subtrochanteric fracture with mild motion deficits and/or malalignment	1	5% LE	6% LE	7% LE	8% LE	9% LE

Examples are useful in learning how to rate per Diagnosis-based Impairments. An example of a rating of a knee injury is provided in Figure 8.

Figure 8. Lower Extremity Diagnosis-based Impairment Example

A patient sustains a knee injury resulting in a partial medial meniscus tear, confirmed by MRI. He declines surgery and is treated conservatively. The patient reports improvement and no significant interference with activities of daily living, including no problems with gait. Physical examination is normal.

The diagnosis of "meniscus injury" is found in Table 16-3, Knee Regional Grid (6th ed., 509) and the specific criteria of "partial (medial or lateral) meniscectomy, meniscal tear, or meniscal repair" results in assignment to Class 1 with associated impairment values of 1%, 2%, 2%, 2% and 3% lower extremity impairment, with the Grade C the default mid-range impairment value of 2% lower extremity impairment. The functional history is Grade Modifier 0 per Table 16-6 Functional History Adjustment: Lower Extremities (6th ed., 516); the physical examination is also consistent with Grade Modifier 0 per Table 16-7 Physical Examination Adjustment: Lower Extremities (6th ed., 517), and the clinical studies are also consistent with Grade Modifier 1 on the basis of "clinical studies confirm diagnosis, mild pathology" per Table 16-8 Clinical Studies Adjustment: Lower Extremities (6th ed., 519). Therefore two of non-key Adjustment Factors are Grade Modifier 0 one less than the Class 1 assignment for the diagnosis. Therefore the final Grade assignment is two less than the default assignment of Grade C. Therefore the rating associated with a Grade C at 1% lower extremity impairment is assigned.

Several rating examples are provided in the Section 16.3e Lower Extremity Diagnosis-based Impairment Examples (6th ed., 522 – 529); Table 10 illustrates the resulting whole person impairment values associated with these examples and the probable impairments based on the Fifth Edition.

Table 10 Lower Extremity Diagnosis-based Impairment Examples

Example	Region	Class	Diagnosis	Sixth Edition Impairment (WPI %)	Fifth Edition Impairment (WPI %)
16-1	Foot and ankle	0	Contusion	0%	0%
16-2		1	Plantar fasciitis	1%	0%
16-3		1	Ankle instability	2%	2%
16-4		2	Bimalleolar fracture	8%	9%
16-5		3	Ankle arthritis	10%	12%
16-6		5	s/p Total ankle replacement with poor result	24%	30%
16-7	Knee	0	Knee strain, resolved	0%	0%
16-8		1	Meniscal tear	1%	1%
16-9		1	s/p Anterior cruciate reconstruction and medial meniscus repair	5%	4%
16-10		2	Subluxing patella	6%	3%
16-11		3	s/p Total knee replacement	15%	20%
16-12		4	Knee arthritis	20%	20%
16-13	Hip	0	Contusion	0%	0%
16-14		1	Hip dislocation and relocation	1%	0%
16-15		3	Hip fracture	12%	25%
Average				7%	8%

This table represents only a small sampling of lower extremity impairment cases and is not necessarily reflective of the impairment rating values that will be observed. The Sixth Edition ratings in this sample averaged 1% whole person permanent impairment less than ratings based on the Fifth Edition.

Section 16.4 Peripheral Nerve Impairment (6th ed., 531-538) uses the same process defined in Chapter 15 for the assessment of peripheral nerve injury. Impairments are based on assignment to ICF Classes dependent on the nerve involved and the extent of the sensory and motor deficits, with the final impairment based on Table 16-12 Peripheral Nerve Impairment: Lower Extremity Impairments (6th ed., 534-536). A separate approach to defining entrapment neuropathy, such as occurs with tarsal tunnel syndrome, is not provided.

Section 16.5 Complex Regional Pain Syndrome Impairment (6th ed., 538-542) is identical to Section 15.5 used for the upper extremity.

Section 16.6 Amputation Impairment (6th ed., 542 – 543) presents Table 16-16 Amputation Impairment (6th ed., 542) where based on the level of amputation with assignment to a Class and associated impairments.

Range of motion impairment is determined by **Section 16.7** (6th ed., 543 – 551) and is used primarily as a physical examination adjustment factor. Impairment for specific joints are assessed and then Table 16-25 Range of Motion ICF Classification (6th ed., 550) is applied to determine the final class. Bilateral motion findings are recorded on Figure 16-12 Lower Extremity Range of Motion Record (6th ed., 551).

Chapter 16 concludes with **Section 16.8 Summary** (6th ed., 552) and an example of rating multiple lower extremity impairments.

Chapter 17 – Spine and Pelvis

17. The Spine and Pelvis

For each Section identify the most important issue for you.

17.1. Principles of Assessment

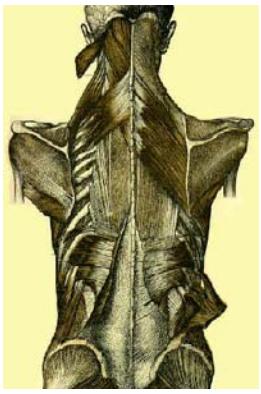
17.2. Diagnosis-Based Impairment

17.3. Adjustment Grid and Grade Modifiers: Non Key Factors

17.4. Pelvic Impairment

17.5. Summary

17.6. Appendix



Chapter 17, Spine and Pelvis (6th ed., 557 – 601) provides impairments for the cervical spine, thoracic spine, lumbar spine and pelvis, based on identification of a specific diagnosis or diagnoses. This method is, to some degree, an expansion of the diagnosis-related estimate (DRE) method used in the Fifth Edition of the *Guides*. The criteria for placement are modified and the impairment value within a class is further refined by considering information related to functional status, physical examination findings, and the results of clinical testing. In the Fourth and Fifth Editions the choice of Diagnosis-related Estimates method versus Range of Motion method often resulted in controversy and often motion findings were questionable.

Current evidence does not support range of motion as a reliable indicator of specific pathology or permanent functional status; therefore **motion is no longer used as a basis for defining impairment.** The rationale for changes from previous rating methods is to standardize and simplify the rating process, to improve content validity, and to provide a more uniform methodology that promotes greater interrater reliability and agreement.

Section 17.1 Principles of Assessment (6th ed., 558 – 560) defines the standards for interpreting symptoms and signs, functional history, physical examination and clinical studies. The **Pain Disability Questionnaire** (PDQ)[27] may be used as a functional assessment tool. The physical examination must elicit findings that are used as adjustment factors, however the findings of "spasm", "guarding" and motion are no longer used as determinants.

Spine and pelvis impairments are based solely on **Diagnosis-Based Impairments**, as explained in **Section 17.2** (6th ed., 560 – 566), with modification by Section 17.3 Adjustment Grids and Grade Modifiers: Non-Key Factors (6th ed., 566 – 592).

The spine is divided into three regions:

1. **cervical**
2. **thoracic**
3. **lumbar**

Diagnoses are divided into categories, including

- **non-specific spinal pain** (soft tissues or strain/sprain)
- **disk herniations and alteration of motion segment integrity (AOMSI)**
- **spinal stenosis**
- **fractures**
- **fracture – dislocations**
- **post-operative complications**

Treatment, if based on findings at the time of impairment assessment and surgery, does not alter the impairment, unless it creates a ratable diagnosis such as fusions that result in alteration of motion segment integrity. The results of the evaluation are recorded in Figure 17-2 Spine and Pelvis Impairment Evaluation Record (6th ed., 561). Each impairment rating involves the use of a regional grid (Cervical Spine, Table 17-2, 6th ed., 564 - 566; Thoracic Spine, Table 17-3, 6th ed., 567 – 568; Lumbar Spine, Table 17-4, 6th ed., 570 – 572.) The use of the Adjustment Grid and grade modifiers (non-key factors) is explained in Section 17.3 (6th ed., 566 – 592).

Common degenerative findings, such as abnormalities identified on imaging studies such as annular tears, facet arthropathy, and disk degeneration, do not correlate well with symptoms, clinical findings, or causation analysis and are not ratable according to the *Guides*.

Objective corticospinal injuries are rated by Chapter 13, The Central and Peripheral Nervous System and combined. Subjective complains such as sexual or sleep dysfunction that are not of a neurogenic origin are considered in the Functional History as a component of activities of daily living and are not otherwise rated.

Table 11 provides examples some spinal impairments and the associated class definitions and default impairment values.

Table 11 Examples of Spine Diagnosis-Based Impairments

Table	Region	Category	Diagnosis	Class	A	B	C Default	D	E
17-2	Cervical	Non-specific	Non-specific chronic, or chronic recurrent neck pain (also know as chronic sprain / strain, symptomatic degenerative disc disease, facet joint pain, chronic whiplash, etc.) – documented history of sprain / strain type injury, now resolved or continued complaints of neck pain with no objective findings on examination	0			0		
17-2	Cervical	Non-specific	Non-specific chronic, or chronic recurrent neck pain (also know as chronic sprain / strain, symptomatic degenerative disc disease, facet joint pain, chronic whiplash, etc.) – documented history of sprain / strain type injury with continued complaints of axial and/or non-verifiable radicular complaints; similar findings documented in previous examinations and present at the time of evaluation	1	1% WP	1% WP	2% WP	3% WP	3% WP
17-2	Cervical	Intervertebral disc herniation and/or AOMSI	Intervertebral disk herniation and/or AOMSI at a single level with medically documented findings; with or without surgery and with documented radiculopathy at the clinically appropriate level present at the time of examination	2	9% WP	10% WP	11% WP	12% WP	14% WP
17-4	Lumbar	Non-specific	Non-specific chronic, or chronic recurrent low back pain (also know as chronic sprain / strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc.) – documented history of sprain / strain type injury, now resolved or continued complaints of back pain with no objective findings on examination	0			0		
17-4	Lumbar	Non-specific	Non-specific chronic, or chronic recurrent low back pain (also know as chronic sprain / strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc.) – documented history of sprain / strain type injury with continued complaints of axial and/or non-verifiable radicular complaints and similar findings documented in previous examinations and present at the time of the evaluation	1	1% WP	1% WP	2% WP	3% WP	3% WP
17-4	Lumbar	Intervertebral disc herniation and/or AOMSI	Intervertebral disk herniation and/or AOMSI at a single level with medically documented findings; with or without surgery and with documented radiculopathy at the clinically appropriate level present at the time of examination	2	10% WP	11% WP	12% WP	13% WP	14% WP
17-4	Lumbar	Intervertebral disc herniation and/or AOMSI	Intervertebral disk herniation and/or AOMSI at multiple levels with medically documented injury; with or without surgery and with documented signs of bilateral or multiple-level radiculopathy at the clinically appropriate levels present at the time of examination	4	17% WP	18% WP	19% WP	20% WP	22% WP

An example of a rating of a spinal injury is provided in Figure 9.

Figure 9. Spine Diagnosis-based Impairment Example

A 38 year old man develops back pain while lifting and twisting and studies confirm a lumbar disk herniation, L4-5, left posterolateral, with left L5 radiculopathy. He underwent surgical diskectomy with improvement, however continued to complaints of back pain with activity. His physical examination revealed decreased dorsiflexion strength of the left ankle and normal sensory function with SLR test positive at 60 degrees.

The diagnosis of "Intervertebral disc herniation" is found in Table 17-4, Lumbar Spine Regional Grid (6th ed., 570) and the specific criteria of "Intervertebral disk herniation and/or AOMSI at a single level with medically documented findings; with or without surgery and with documented radiculopathy at the clinically appropriate level present at the time of examination" results in assignment to Class 2 with associated impairment values of 10%, 11%, 12%, 13% and 14% whole person impairment, with the Grade C default mid-range impairment value of 12% whole person impairment. The functional history per Table xx-x Functional History Adjustment: Spine based on report of pain normal activity is Grade Modifier 2: Lower Extremities (6th ed., 575); the physical examination per Table 17-7 Physical Examination Adjustment: Spine (6th ed., 576); based on report of positive SLR is Grade Modifier 2; and the clinical studies per Table 17-9 Clinical Studies Adjustment: Spine (6th ed., 581) are also consistent with Grade Modifier 2. With the Grade Modifiers being consistent with the diagnosis Class the impairment remains at the default assignment of Grade C with a default impairment of 12% whole person permanent impairment.

Several rating examples are provided in the Section 17.3g Spine Impairment Case Examples (6th ed., 583 - 592); Table 11 illustrates the resulting whole person impairment values associated with these examples and the probable impairments based on the Fifth Edition. Some of the examples do not provide range of motion that would be required to assess impairment by the Sixth Edition, therefore Example 17-16 was not used and best estimates were provided, as appropriate.

Table 11 Spine Impairment Examples

Example	Region	Class	Diagnosis	Sixth Edition Impairment (WPI %)	Fifth Edition Impairment (WPI %)
17-1	Cervical	0	Cervical sprain / strain	0%	0%
17-2	Cervical	1	Intervertebral disk herniation (cervical disk herniation with resolved right-sided C6 radiculopathy)	6%	7%
17-3	Cervical	1	Intervertebral disk herniation or AOMSI at a single level (status posted herniated nucleus pulposus and anterior cervical diskectomy and fusion at C5-6 with intermittent left arm pain	7%	25%
17-4	Cervical	2	Intervertebral disk herniation or AOMSI at a single level (cervical disk herniation with C8 radiculopathy)	12%	18%
17-5	Cervical	3	Intervertebral disk herniations and AOMSI at multiple levels (cervical disk herniations at 2 levels, with unresolved radiculopathy at single level)	12%	23%
17-6	Cervical	4	Vertebral fractures at multiple levels (vertebral fracture with C4-7 fusion and unresolved radiculopathy at 2 levels)	29%	23 %
17-7	Thoracic	0	Thoracic sprain / strain (postural discomfort)	0%	0%
17-8	Thoracic	1	Intervertebral disk herniation or AOMSI at one or more levels (herniated nucleus pulposus T1-2 with thoracic radiculopathy at T2)	4%	5%
17-9	Thoracic	3	Vertebral fractures at multiple levels (compression fractures of T7 (40%) and T8 (60%) treated with vertebroplasty)	12%	10%
17-10	Lumbar	0	Lumbar sprain / strain (non-specific low back pain, resolved)	0%	0%
17-11	Lumbar	1	Intervertebral disk herniation or AOMSI at a single level (herniated nucleus pulposus L5-S1, left, now asymptomatic)	0%	0%

17-12	Lumbar	1	Recurrent low back pain without objective findings (recurrent low back pain without objective findings on examination or clinical studies)	1%	5%
17-13	Lumbar	2	Intervertebral disk herniation or AOMSI at a single level (lumbar disk herniation, L4-5, left posterolateral, with left L5 radiculopathy)	12%	10%
17-14	Lumbar	2	Intervertebral disk herniation or AOMSI at a single level (status post lumbar fusion at L4-5 with persistent L5 radiculopathy)	13%	25%
17-15	Lumbar	3	Intervertebral disk herniation or AOMSI at multiple levels (lumbar disk herniation L5-S1 with multiple level fusion)	19%	18%
Average				8%	8%

This table represents only a small sampling of spine impairment cases and is not necessarily reflective of the impairment rating values that will be observed. The ratings averaged the same 8% whole person permanent impairment. No conversion to regional spinal impairment is provided in the Sixth Edition.

Section 17.4 Pelvic Impairment (6th ed., 592 – 597) provides Table 17-11 Diagnosis-Based Impairment Grid: Pelvis and a basis for rating pelvic fractures.

Section 17.5 Summary (6th ed., 597-598) lists the steps involved in defining spinal and pelvic impairment,

Appendix 17-A Pain Disability Questionnaire (6th ed., 599 – 600) provides the Pain Disability Questionnaire and explains the scoring process.

Chapter 13 – Central and Peripheral Nervous System

Chapter 13, The Central and Peripheral Nervous System (6th ed., 321 – 345) continues to use a methodology similar to that of the Fifth Edition rather than assigning a Class and then assigning a Grade within that Class. This chapter is "evolutionary but not revolutionary", which has led to some important changes and additions to the chapter while leaving the overall format essentially intact. Although the introduction states that one of the goals is "to offer single values rather than range for impairment categories. Ranges implied a level of impairment rating validity that does not exist", most of the tables provide ranges without, however, explanation of how a value is selected within a range.

The primary application of this chapter in previous Editions has been for the rating of traumatic brain injuries and spinal cord injuries. This Edition comments that "in contrast to previously held belief, the symptoms of mild traumatic brain injury generally resolves in days to weeks, and the patient with no impairment." (6th ed., 330).

The Fifth Edition was criticized for having duplication of materials in the Central and Peripheral Nervous System chapter that was presented in other chapters, with some differences between the ratings assigned. Thus, stated goals for the Sixth Edition included a collaborative decision of the Editorial Board of the Sixth Edition to maintain most ratings related to limbs in the upper and lower extremity chapters (Chapters 15 and 16, respectively), to refer visual disorder ratings to the visual disorders chapter (Chapter 12), and to provide most ratings of nerves of the head and neck in the ear, nose, and throat (ENT) chapter (Chapter 11), with Complex Regional Pain Syndrome (CRPS) rated only in the upper extremities and lower extremities chapters. Attention was also paid to maintaining consistency between this chapter on neurology and the:

- Mental and behavioral disorders chapter (Chapter 14) in terms of ratings of higher cortical function
- Upper and lower extremities chapters in terms of complete loss of limb function.
- Digestive system chapter (Chapter 6) in terms of loss of bowel control.
- Urinary and reproductive systems chapter (Chapter 7) in terms of bladder and sexual function.

Table 13-1 Summary of Chapters Used to Rate Various Neurologic Disorders (6th ed., 323) assists the reader in finding chapters that have been deferred to in order to rate neurologic disorders such as radiculopathy and other disorders to the spinal roots, plexus injuries and other plexopathies, focal neuropathy or mononeuropathy relating to the limbs, CRPS, visual disorders, vestibular disorders, disorders of the cranial nerves other than trigeminal and glossopharyngeal neuralgia, dysarthria and dysphonia, and primary mood disorders, anxiety disorders, and psychotic disorders.

Section 13.1 (6th ed., 322 – 326) provides the **principles of assessment**. As many of the conditions discussed in this chapter, even if "permanent", can result in significantly less impairment when optimally treated, the clinician is instructed to assess response to treatment before providing an impairment rating. This is to include:

- History of the response to treatment, and a determination whether there has been an adequate treatment course;
- Determination of whether the treatment has been sufficiently aggressive and of adequate duration with improvement in patient function;
- Evaluation of whether a suitable number of treatment options have been applied, and both medication compliance and patient cooperation with treatment assessed;
- Documentation of the response to treatment (with it noted that treatment may result only in a partial remission);
- Consideration of whether residual problems represent symptoms or medication side effects;
- Identification of objective evidence to support impairment when the condition is intermittent, including documentation regarding missed work or school days, examination of both medication records from pharmacies and medical records to establish medication use and corroborate symptoms.

The approach in assessing **central nervous system impairment** presented in **Section 13.2** (6th ed., 326) and **Section 13.3** (6th ed., 326 – 333) is similar to the Fifth Edition, however there are some changes in the values of impairment, in part resulting from the definition of five classes of impairment. With the Fifth Edition, the most common basis for rating central nervous system impairment is Table 13-6 Criteria for Rating Impairment Related to Mental Status (5th ed., 320) or Table 13-8 (5th ed., 525) with impairment classes based on interference in activities of daily living. In the Sixth Edition Table 13-8 Criteria for Rating Neurologic Impairment Due to Alteration in Mental Status, Cognition, and Highest Integrative Function (MSCHIF) bases classification of cognitive impairment on findings of an extended mental status exam, neuropsychological assessment and testing, and description of interference in activities of daily living. Maximum impairment is 50% whole person permanent impairment; previously it was 70% whole person permanent impairment. Table 13-10, the Global Assessment of Functioning

(GAF) Impairment Score (6th ed., 334) is provided to define emotional or behavioral impairment due to an objective central nervous system lesion. Conditions that are primarily psychological are rated by Chapter 14, Mental and Behavioral Disorders. Maximum impairment for emotional and behavioral disorders is the same as MSCHIF impairment, i.e. 50% whole person permanent impairment; previously it was 90% whole person permanent impairment. Maximum whole person permanent impairment for other ratable CNS impairments is also less; consciousness and awareness is now 100% previously 90%, episodic loss of consciousness or awareness 50% previously 70%, and sleep and arousal 50% previously 90%.

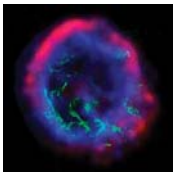
Spinal cord injuries are rated per **Section 13.4 Criteria for Rating Impairment Due to Spinal Cord Dysfunction** and Movement Disorders (6th ed., 333 – 335), **Section 13.5 Criteria for Rating Impairments of Upper Extremities due to CNS Dysfunction** (6th ed., 335), **Section 13.6 Criteria for Rating Impairments of Station, Gait and Motion Disorders** (6th ed., 336), **Section 13.7 Criteria for Rating Neurogenic Bowel, Bladder, and Sexual Dysfunction** (6th ed., 336), and Section 13.8 **Criteria for Rating Respiratory Dysfunction** (6th ed., 336 – 337). The number of classes of impairments range from four (sexual dysfunction) to six (respiratory dysfunction), rather than the five class approach. Some maximum values have changed, i.e. bladder maximum of 30% whole person permanent impairment previously 60% whole person permanent impairment, sexual 15% previously 20%, and respiratory 65% previously 90% +.

Section 13.9 (6th ed., 339 – 341) provides criteria for rating peripheral neuropathy, neuromuscular junction disorders, and myopathies, however ratings of peripheral nerve lesions are performed using Chapter 15, The Upper Extremities or Chapter 16, The Lower Extremities. Criteria for rating impairments related to chronic pain (Fifth Edition Section 13.8, 5th ed., 343 – 344) have been replaced by Table 13-17 Dysesthetic Pain Secondary to Peripheral Neuropathy or Spinal Cord Injury (6th ed., 339). The maximum impairment for dysesthetic pain is 10% whole person permanent impairment (Class 3, “severe dysesthetic pain”); the maximum impairment from the Fifth Edition for Table 13-22 Criteria for Rating Impairment Related to Chronic Pain in One Upper Extremity was 60% whole person permanent impairment (Class 4, dominant extremity, “individual cannot use the involved extremity for self-care or daily activities.”). A brief description of **complex regional pain syndrome** is provided in **Section 13.10 (**6th ed., 341), however these ratings are performed using Chapters 15 and 16.

Instruction for rating impairments due to migraines are provided in **Section 13.11 Criteria for Rating Impairments Related to Craniocephalic Pain** (6th ed., 341) and Table 13-18 (6th ed., 342) with scores obtained from the MIDAS (Migraine Disability Assessment) Questionnaire. The maximum impairment for migraine headaches is 5% whole person permanent impairment, however the maximum assigned for pain in Chapter 3, Pain is 3% whole person permanent impairment.

Miscellaneous peripheral nerves not ratable in the previous edition are discussed in Section 13.12 (6th ed., 343) and listed in Table 13-20 (6th ed., 344).

Chapter 14 – Mental and Behavioral Disorders



Chapter 14 Mental and Behavioral Disorders (6th ed., 347 – 382) discusses impairments due to mental disorders and considers mental and behavioral impairments that may result from them. These are heretofore referred to as Mental and Behavioral Disorders (M&BD). The emphasis is on evaluating brain function and its effect on behavior in the absence of evident traumatic or disease-related objective CNS damage. The most significant change is the provision of numeric ratings.

Section 14.1 Principles of Assessment (6th ed., 348 – 349) explains initial considerations, diagnosis and diagnostic categories. The importance of following the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), and strictly adhering to the DSM-IV criteria for diagnosis, is emphasized in Section 14.1b (6th ed., 348). The introduction to the M&BD chapter states that only impairments for selected well-validated major mental illnesses are considered, and Section 14.1c (6th ed., 348 – 349) elaborates stating that the purpose of the chapter is not to rate impairment in all persons who may fit a DSM-IV diagnosis since many conditions are common in the general population and do not require an impairment rating. Given the use of the *Guides* in medicolegal settings, impairment rating in the Sixth edition is specifically limited to Mood disorders (including major depressive disorder and bipolar affective disorder), Anxiety disorders, and Psychotic disorders (including schizophrenia). Section 14.1c further provides a list of disorders that are NOT ratable in this chapter, including psychiatric reaction to pain, somatoform disorders, dissociative disorders, personality disorders, psychosexual disorders, factitious disorders, substance use disorders, sleep disorders, dementia and delirium, mental retardation, and psychiatric manifestations of traumatic brain injury. Section 14.1 provides rules including the following:

- In the event of a mental and behavioral disorder that is judged independently compensable by the jurisdiction involved, the mental and behavioral disorder impairment is combined with the physical impairment.

- In most cases of a mental and behavioral disorder accompanying a physical impairment, the psychological issues are encompassed within the rating for the physical impairment, and the mental and behavioral disorder chapter should not be used.

Section 14.2 Psychiatric / Psychological Evaluation (6th ed., 349 - 351) defines standards for the assessment and special features of the **Mental and Behavioral Disorders Independent Medical Examination** are provided in **Section 14.3** (6th ed., 351 – 353). Specific features of the M&BD Independent Medical Examination (IME) are delineated and a brief discussion of the utility of psychological testing, as well as a listing in Table 14-3. Selected Psychological Assessment Tools in Adults (6th ed., 350). Although the reader is given guidance regarding the review of psychological testing, use of the patient interview, review of records, and mental status examination is stressed as the foundation for evaluation of the patient and determination of the impairment rating. A number of specific suggestions for the M&BD IME are provided in Table 14-4 (6th ed., 352), including recommendations to:

- Screen individuals for past and current substance abuse;
- Evaluate the legal history;
- Obtain military history;
- Note whether there is a pattern of over endorsing symptoms during the psychiatric interview;
- Assess the patient's motivation vis-à-vis returning to work;
- Determine if symptom exaggeration or malingering is present;
- Ask about the patient's attitude to the third-party payer (employer, insurance company, etc.);
- Assess the influence of the litigation process on return to work;
- Determine whether adequate pharmacologic and biologic treatment has been provided, including whether the patient has accepted and complied with reasonable treatment.

Most of these recommendations are elaborated upon in detail in the subsequent text.

The patient cannot be rated until the condition is "permanent" as explained in **Section 14.4 Maximum Medical Improvement** (6th ed., 353 – 355).

The M&BD impairment rating is based on consideration of 3 scales: the Brief Psychiatric Rating Scale (BPRS), the Global Assessment of Function (GAF), and the Psychiatric Impairment Rating Scale (PIRS), as explained in **Section 14.5 Concepts for Impairment Ratings** (6th ed., 355 – 356) and **Section 14.6 Methods of Impairment Rating** (6th ed., 356 – 360). These scales are provided in the appendices to the chapter. Instructions to only use the M&BD chapter to rate Axis I pathology provided in the introduction are reiterated. Underlying personality vulnerabilities and borderline intellectual function are noted to be preexisting conditions that are not ratable, especially since their assessment is generally characterized by a lack sufficient interrater reliability. The importance of considering "what portion of the impairment is due to the potentially unremitted illness versus the portion driven

by possible chronic preexisting personality vulnerabilities and/or borderline intellectual functioning" (6th ed., 355) is stressed. In those situations when there is potential impairment caused by a work-related injury or illness, the evaluator is instructed to determine whether a ratable preexisting mental and behavioral impairment existed, and, if so, to calculate both the current permanent impairment and that resulting from the preexisting condition, subtracting the latter from the former in order to arrive at the rating due solely to the work-related injury or incident.

The BPRS primarily measures major psychotic and nonpsychotic symptoms in patients with major psychiatric illnesses and, as it is "probably the most-researched instrument in psychiatry", was considered appropriate for use in the impairment rating process. The GAF (also used in the Neurology chapter) constitutes Axis V of the DSM-IV diagnosis. As it is routinely used as part of the multiaxial assessment, and has both undergone significant psychometric assessment and been demonstrated to have satisfactory interrater reliability, its' use in formulating an impairment rating appeared obvious. Nonetheless, Section 14.5 also notes some of the limitations of the GAF, which is one of the reasons for combining its' use with that of the BPRS and PIRS.

The PIRS is the final scale used. It evaluates the behavioral consequences of psychiatric disorders and, while expanded in order to rate impairment, is similar in construction to the GAF. The stated purpose of including all three of these scales is "to provide a broad assessment of the patient with M&BD", as the BPRS focuses solely on symptoms and the PIRS on role function whereas the GAF is a blend of the two. The goal is to "arrive at a strongly supportable impairment rating". As the approach used in the M&BD chapter is a dramatic departure from what was used previously (especially since numerical psychiatric ratings have not been used since the Second Edition), the impact and reliability is yet to be determined. **Examples** are provided in **Section 14.7** (6th ed., 360 – 368) and **Section 14.8** (6th ed., 369 – 382) provides the **Brief Psychiatric Rating Scale.**

Notes

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