COLORADO
Department of
Labor and Employment

Division of Workers' Compensation Presents:

Level II Accreditation

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COLORADO
Department of
Labor and Employment

Division of Workers' Compensation
Level II Accreditation Course Curriculum

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Note: This curriculum was developed by the Division of Workers' Compensation with input and approval of the Medical Care Advisory Committee and the medical director. It must be used with the 3rd revised edition of the *AMA Guides to the Evaluation of Permanent Impairment* only.

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Division of Workers' Compensation Level II Accreditation Curriculum Overview

- In the left hand pocket of the binder you will find a laminated Combined Values Chart with conversion charts for easier access when calculating impairment ratings.
- The Division's Impairment Rating Tips (Desk Aid 11) found within this curriculum are important to review prior to performing impairment ratings. This document is also available separately on the Division's website.
- The pre-test and answers are included, which should be taken for preparation prior to the examination.
- We encourage you to review the material by starting with the Curriculum and then using the *AMA Guides* as a reference to the Curriculum.
- Chapters within the Curriculum contain case examples for calculating impairment ratings with the use of the *AMA Guides* and the Division's Impairment Rating Tips (Desk Aid 11). These are the same cases that are explained in the seminar.
- Most chapters in the Curriculum are intended to be used in conjunction with the corresponding chapters in the *AMA Guides, 3rd Edition, revised*, and the Division's Impairment Rating Tips (Desk Aid 11).

Table of Contents

Level II Pre-Test

To the Level II Registrant:

Attached is the Level II Accreditation Pre-test. The pre-test reflects the objectives and the majority of the Level II educational materials that will be included in the final accreditation exam. The Pre-test will aid physicians without a sufficient background in the specialty sections to identify deficits. Please review the pre-test prior to studying the curriculum. After studying the curriculum, take the pre-test. Re-study those areas you did poorly in on the pre-test. For questions requiring an impairment rating, record the answer as directed. The answers to the pre-test are included with your binder. All physicians seeking Full Accreditation should answer questions 1-78. We encourage all physicians seeking accreditation to become fully accredited. If you plan to be accredited with limitations, you should complete questions 1-29, and all questions in sections required for your specialty.

Questions #1 – 16	Legal, Ethical & Administrative
Questions #17 – 29	Neurological (For questions 17–23, write the question number and your hand written answer on a separate sheet and attach to your computer answer sheet.) Show how you calculated the nerve rating.
Questions #30 – 38	Upper Extremity (For questions 34-38, complete both pages of the attached AMA Upper Extremity Report.)
Questions #39 – 53	Spine/Lower Extremity (For questions 47-50, complete both pages of the attached AMA Spinal Report.) (For questions 51-53, write the question number and your hand written answer on a separate sheet of paper and attach to your computer answer sheet.)
Questions #54 – 58	Vision, Hearing, Etc.
Questions #59 – 68	Pulmonary/Cardiovascular
Questions #69 – 72	Dermatological (For question 71, write the question number and your hand written answer on a separate sheet of paper and attach to your computer answer sheet.)
Questions #73 – 78	Mental & Behavioral Disorders

Level II TEST QUESTIONS
Pre-test

1. What form or forms must be completed when received by the physician?

   a) WC1, WC2, WC3.
   b) M1, M2, M3.
   c) WC 164
   d) Narrative report form and the Physicians Initial Report.

2. A 20 year-old housekeeper reports two days after being casted for a radial head fracture. He requests a work status report from you and informs you that his boss does not allow light duty. As the authorized physician, you should:

   a) release the housekeeper to work at a light duty status and let the employer determine work status.
   b) place the housekeeper on "unable to work status" because no light duty is available.
   c) ask the housekeeper what other types of duty are available and release him to a specific job duty.
   d) release the housekeeper to return to work with specific physical restrictions.

3. Cancellation fees are appropriate under which of the following circumstances?

   a) Whenever services are scheduled but not actually provided because the patient has canceled or re-scheduled the appointment.
   b) When less than 24 hours notice is given of cancellation or re-scheduling.
   c) When the insurer has scheduled the appointment and the patient did not come, and the insurer did not timely cancel the appointment.
   d) When the patient has been given written notice by the Division of Workers' Compensation of the appointment and does not come.

4. All of the following are "recognized independently practicing non-physician providers" in the Rule 16 of the Workers' Compensation Rules of Procedure **EXCEPT**:

   a) Physical Therapists.
   b) Audiologists.
   c) Physician Assistants.
   d) Massage Therapists.

5. When rendering opinions about a workers' compensation case, the physician may appropriately be influenced by:

   a) the insurer.
   b) a medical consultant.
   c) the defense attorney.
   d) none of the above.

6. A copy of the Physician's WC164 report(s) must always be:

   a) mailed to the insurer.
   b) mailed to all employers.
   c) mailed to the non self-insured employers.
   d) filed with the Division of Workers' Compensation.

7. Based on recommendations from the utilization review panel, the director of the division can order:

   a) the insurer to pay for costs of an unauthorized physician.
   b) a change in the date of maximum medical improvement.
   c) a retroactive denial of fees for the treating physician.
   d) an independent medical exam to review the question addressed by the utilization review panel.

8. In order to find a patient at Maximum Medical Improvement, the physician must declare that:

   a) future medical maintenance treatment is not required.
   b) the physical or mental impairment as a result of the injury is reasonably expected to improve with treatment.
   c) a course of treatment has a reasonable prospect of success and the claimant submits to such treatment.
   d) the physical or mental impairment as a result of the injury is stable.

9. A physician must complete the physician's WC164 report within:

   a) 7 days.
   b) 14 days.
   c) 10 days.
   d) 21 days.

10. If you do not respond promptly to a request for a verification of work status of a patient:

    a) the insurer may withhold payment of your fees.
    b) the insurer may discontinue benefits to the patient.
    c) you will automatically lose your Level II accreditation.
    d) the employer may terminate the employee.

11. Once the patient is declared at MMI, maintenance treatment:

    a) cannot be performed.
    b) is acceptable only if it occurs less than once a month.
    c) must be documented on the WC164 “closing” form.
    d) is acceptable up to a frequency of every 2 weeks.

12. The filing of a claim for compensation under the Workers' Compensation act is deemed:

    a) a limited waiver of the doctor-patient privilege to persons who are necessary to resolve the claim.
    b) not to be a waiver of the doctor-patient privilege to persons who are necessary to resolve the claim.
    c) to be a full waiver of the doctor-patient privilege to persons who are necessary to resolve the claim.
    d) to be a waiver allowing the physician to send copies of the full medical record to persons who are necessary to resolve the claim.

13. Temporary disability benefits may be terminated under three of the following conditions. Which of the following is **NOT** a condition under which benefits may be terminated?

    a) The patient is able to return to modified employment.
    b) The attending physician gives the employee a written release to return to regular employment.
    c) The attending physician releases the employee to modified duty but the employer has no modified duty which fits the medical restrictions.
    d) The attending physician gives the employee a written release to return to modified employment, the employment is offered to the employee in writing and the employee fails to begin such employment.

14. Reimbursement for completion of the Physician's “closing” report on Maximum Medical Improvement/ Impairment Report and the accompanying impairment worksheet(s) and report by the authorized treating physician providing primary care may be done by which of the following methods?

a) Fee to be calculated per the applicable Division code to a maximum of $355.00 (2010 value).
b) $42 under code 99962 for the completion of the forms
c) A two-level increase of the office visit code if the form is filled out at the time of the patient's visit.
d) Completion of this form is included in the usual office level service and no additional fee can be charged.

15. Which of the following describes an authorized medical provider?

a) A medical consultant selected by the claimant's attorney.
b) A provider selected by the employer after the time of injury.
c) A medical consultant chosen by the patient and not approved by the patient's primary medical provider.
d) A provider selected by the patient at the time of injury when the employer has not designated a provider.

16. Did you complete the pretest:

a) prior to reviewing any of the curriculum.
b) after reviewing the curriculum.
c) after thoroughly studying the curriculum.

Level II TEST QUESTIONS
Pre-test

NEUROLOGICAL

For questions 17 through 23, write the question number and your hand written answer on the back of the answer sheet.

A patient has his arm wrenched backward and down at the shoulder in an auto accident. Injuries to brachial plexus upper root C5/C6 are verified by neurologic exam originally. With time considerable recovery occurred, but he still has to use substitute patterns for C5/C6 weakness despite complete range of motion against gravity and some resistance. He also has a mild sensory residual deficit that interferes with activity somewhat.

17. What would be the sensory and motor impairment total loss of these nerve roots?

18. Calculate the sensory impairment.

19. Calculate the motor impairment.

20. What is the total upper extremity and whole person rating for this injury?

A 35 year old budget analyst is involved in a severe motor vehicle accident while in route to a sales meeting at a branch unit. The accident occurs during a blizzard on mountain roads. The employee suffers a significant closed head injury with residual impairments. Prior to the accident, the employee was well known in his field and respected by his colleagues. In addition, he was a friendly, outgoing person who had no problems socially, at home, or at work. Following the accident, the employee is unable to perform simple mathematical calculations necessary to balance his checkbook. In addition, he has episodes of significant emotional outbursts. These outbursts interfere with his family relationships and cause difficulty at work. Neuro-psychiatric testing confirms the patient's limitation with mathematic functions. A psychiatrist who has been treating the patient confirms that the emotional problems he is now experiencing are secondary to the accident. In addition, the psychiatrist believes the patient meets criteria for post-traumatic stress disorder. He is unable to drive or even be a passenger in the car when the family plans trips to the mountains due to his anxiety in this setting.

21. What impairment rating would you give this employee under the nervous system?

22. What impairment would you give this employee under the mental and behavioral section?

23. What would be the total whole person impairment for this employee assuming there are no other ratable impairments other than those mentioned above?

24. It is possible to receive a rating for specific emotional disturbances based on combining ratings for this deficit from both the nervous system section and the mental and behavioral disorder section.

    a) True
    b) False

25. If an ankle range of motion deficit is present after treatment for an anterior tarsal tunnel syndrome affecting the deep peroneal nerve, it should:

a) be combined with the sensory rating before the motor rating is combined to the total.
b) be combined with the rating after the sensory and motor ratings are added.
c) combined with the rating after the sensory and motor ratings are combined.
d) not be used in the rating because it is 2º to a neurological deficit.
e) may be used when combined at the whole body impairment level.

26. Table 3, the sensory rating table in Chapter 4 of the AMA Guides, and Table 10, the sensory rating in Chapter 3:

a) have identical ratings categories.
b) may be used to rate any nerve from either chapter interchangeably.
c) can be used for the nerves in their specific chapters only.
d) are both given in extremity ratings.
e) are both given in whole body ratings.

27. A patient suffers an impairment of speech due to weakness of cranial nerves. This patient should receive a rating:

a) using Table 4, which grades the motor deficit loss for each nerve involved.
b) using the section in the neurological chapter which describes language disturbances.
c) according to classifications given in Chapter 9, the ear, nose and throat chapter.
d) according to loss of language function as noted in the mental and behavioral disorders chapter.

28. Which of the following sections is **not** included under the brain or spinal cord impairment values table?

a) episodic neurological disorders
b) language disturbances
c) emotional disturbances
d) use of the upper extremities
e) normal living postures

29. After the sensory and motor deficits of a specific nerve are calculated they are:

a) added to each other.
b) combined with each other.
c) converted to a whole body rating and combined.
d) added to other functional deficits.
e) added to the range of motion.

Level II TEST QUESTIONS
Pre-test

UPPER EXTREMITY

30. Your office employee was on the way to the office supply store when he was involved in a serious motor vehicle accident. He suffered a humerus fracture, amputation of the index finger at distal interphalangeal joint, and a fractured lunate. After the patient fully recovered from these injuries, he had the following impairments: range of motion loss of the shoulder, amputation of the distal interphalangeal joint with a range of motion and sensory loss from the level of the proximal interphalangeal joint, and carpal instability based on ex-ray findings. In what order, should the impairments be combined to determine the total upper extremity impairment?

    a) shoulder range of motion; carpal instability; sensation, amputation, and range of motion of the index finger.
    b) shoulder range of motion, amputation, sensation, and range of motion of index finger; carpal instability.
    c) sensation, amputation, and range of motion of index finger; carpal instability; shoulder range of motion.
    d) amputation, sensation, and range of motion of index finger; carpal instability; shoulder range of motion.
    e) amputation, sensation, and range of motion of index finger; shoulder range of motion; carpal instability.

31. Which of the following statements is correct regarding range of motion impairment of digits?

    a) Range of motion deficits in the same plane are combined for all digits.
    b) Range of motion deficits in the same plane are added for all digits.
    c) Range of motion in the same plane (e.g. flexion, extension) are combined for the thumb only.
    d) Range of motion from the DIP, PIP, and M-P joints are added for all digits.
    e) Range of motion deficits for the thumb are added to determine total range of motion deficits.

32. Sensory loss for a digit is determined by:

    a) measuring two point discrimination and multiplying the percentage of loss, (25%, 50%, or 100%), times the maximum loss for that nerve.
    b) measuring 2 point discrimination and the length of the digit involved to determine loss at that level.
    c) using light touch to determine partial loss value and multiplying this times the maximum loss for that nerve.
    d) using the same grading method described in the neurological section.
    e) using light touch to determine partial and total sensory loss based on available tables in the Guides.

33. Which of the following is a correct statement regarding impairment in the "Other Disorders" section of the upper extremities?

a) All of the "other" impairments must be combined with range of motion and other impairments of the upper extremity.
b) These disorders apply to many cases and must be included in the total impairment rating if present.
c) To avoid duplication of rating, many of these disorders cannot be combined with the range of motion impairment.
d) All "other" impairments are given in upper extremity percentages and do not require calculation.
e) Impairment secondary to pre-existing arthritis cannot be rated in this section.

For questions 34 through 38, <u>complete both pages of the attached AMA Upper Extremities Report Form.</u>

A machinist is involved in a significant accident at work. He suffers loss of the little finger at the distal interphalangeal joint, ulnar digital nerve injury at the MP joint of the thumb and range of motion loss of the elbow secondary to a fracture. After receiving full treatment for his injuries, he has 2 point discrimination of 8mm on the ulnar side of the thumb to the MP joint. His elbow range of motion is 10º extension to 120º flexion and 70º supination with 80º pronation.

34. What is the digit % loss for the fifth finger?

35. What is the digit % loss for the thumb?

36. What is the hand impairment?

37. What is the % impairment for the elbow?

38. What is the upper extremity total impairment?

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 1 (Hand)**

SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion						Amputation	Sensory Loss	Other Disorders	Hand Impairment %
Record Motion, Ankylosis and Impairment %						Mark Level & Impairment %	Mark Type, Level & Impairment %	List Type & Impairment %	• Combine Digit IMP% • Convert to Hand IMP%
			Flexion	Extension	ANK	IMP%				
THUMB	**IP**	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
				Motion	ANK	IMP%			
	CMC	RAD ABD	Angle°						Abnormal Motion [1]
			IMP%						Amputation [2]
		ADD	CMS						Sensory Loss [3]
			IMP%						Other Disorders [4]
		OPP	CMS						Digit Impairment % • Combine 1, 2, 3, 4
			IMP%						
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Add Impairment %			**CMC + MP + IP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	**• Convert above**
			Flexion	Extension	ANK	IMP%				
INDEX	**DIP**	Angle°							Abnormal Motion [1]
		IMP%							Amputation [2]
	PIP	Angle°							Sensory Loss [3]
		IMP%							Other Disorders [4]
	MP	Angle°							Digit Impairment % • Combine 1, 2, 3, 4
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP=** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	**• Convert above**
MIDDLE	**DIP**	Angle°							Abnormal Motion [1]
		IMP%							Amputation [2]
	PIP	Angle°							Sensory Loss [3]
		IMP%							Other Disorders [4]
	MP	Angle°							Digit Impairment % • Combine 1, 2, 3, 4
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	**• Convert above**
RING	**DIP**	Angle°							Abnormal Motion [1]
		IMP%							Amputation [2]
	PIP	Angle°							Sensory Loss [3]
		IMP%							Other Disorders [4]
	MP	Angle°							Digit Impairment % • Combine 1, 2, 3, 4
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	**• Convert above**
LITTLE	**DIP**	Angle°							Abnormal Motion [1]
		IMP%							Amputation [2]
	PIP	Angle°							Sensory Loss [3]
		IMP%							Other Disorders [4]
	MP	Angle°							Digit Impairment % • Combine 1, 2, 3, 4
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Add Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	**• Convert above**

Total Hand impairment (Add Hand Impairment % For Thumb + Index + Middle + Ring + Little Finger)
Upper Extremit Impairment (**Convert Total Hand Impairment % To Upper Extremity Impairment %)

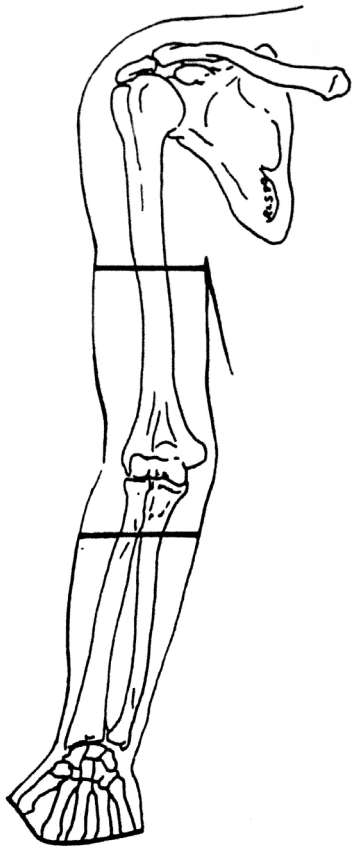
Combined Values Chart; Use Table 1 (Digits to Hand); ** Use Table 2 (Hand To Upper Extremity)

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** _____ [1]				**IMP% =** _____ [2]		**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand _____% + Wrist _____% + Elbow _____% + Shoulder _____%)	=
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=

Total Upper Extremity Impairment (Combine I + II + III + IV + V)	=
Impairment of Whole Person (Use Table 3)	=

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Level II TEST QUESTIONS
Pre-test

SPINAL, LOWER EXTREMITY & PELVIC IMPAIRMENT

39. Spinal impairment evaluation should be performed:

    a) prior to completion of all necessary medical, surgical and rehabilitation treatment.
    b) only when the acute illness or spasm is present.
    c) when the individual's condition has become static and well stabilized.
    d) when both the insurance carrier and the patient's attorney agree the patient has reached MMI.

40. The only known criterion for validating optimum effort is:

    a) measurement techniques using inclinometers.
    b) simultaneous measurement of compound spinal motions.
    c) use of Waddell's signs to identify behavioral modulation.
    d) reproducibility of abnormal motion after consecutive measurements.
    e) discrepancy between sitting and recumbent straight leg raising measurements.

41. Essential elements of the physical examination for the purpose of rating spinal impairment included all of the following **except**:

    a) palpation
    b) range of motion testing
    c) functional capacity evaluation
    d) straight leg raise

42. Valid optimum effort in spinal range of motion testing is defined as:

    a) six consecutive measurements which fall within ± 5% or 10º (whichever is greater).
    b) three consecutive measurements which fall within ± 10% or 5º (whichever is greater).
    c) three consecutive measurements which fall within ± 10% or 5º performed on at least two separate days.
    d) concordance between standing range of motion testing and recumbent straight leg raise.
    e) consecutive measurements that vary less than two standard deviations the maximum or median motion.

43. Table 53, p. 80 should be used to rate diagnosis - related factors including all of the following **except**:

a) vertebral body compression fracture
b) spondylolisthesis
c) ankylosis
d) intervertebral disc lesions
e) spinal stenosis

44. Residual signs and symptoms which should be combined with all impairments are defined as the following **except**:

a) chronic pain complaints
b) spinal cord or spinal nerve root injuries with neuropathic impairment
c) ankylosis
d) abnormal motion in spine or extremities

45. Which of the following statement(s) regarding ankylosis as it is used to rate impairment is **incorrect**:

a) Ankylosis includes complete absence of motion.
b) To rate ankylosis use table 54, page 86, when radiographic methods are available.
c) Ankylosis is present when planar restriction of motion prevents the subject from reaching the neutral position of motion in that plane.
d) Table 54, page 86, should be combined with Table 53, page 80, to determine the individual's impairment for ankylosis.

46. Straight leg raising [SLR] may be used as an additional "effort factor" check for lumbar spinal flexion. The test for lumbar spine flexion is invalid unless the following criterion is met:

a) Hip flexion accounts for at least 50% of total flexion
b) If the tightest SLR ROM exceeds the sum of hip (sacral) flexion and extension by more than 50%.
c) Combined lumbar flexion and hip (sacral) flexion are within ± 25% of SLR ROM.
d) Sitting and recumbent SLR are consistent by ± 20º.
e) The tightest SLR ROM exceeds the sum of hip (sacral) flexion and extension by 10º or less.

For questions 47-50, complete the two-page attached AMA Spinal Report Form. Show your calculations for the sensory rating.

J.C. is a 39 year old farm hand who fell from a tractor and ruptured her L5-S1 disc. When conservative measures failed, the patient underwent an L5-S1 discectomy and made an uneventful recovery, returning to work at her previous job. One year later, she is in your office for an impairment rating.

The patient complains of mild residual lower back pain and some loss of flexibility. Her lower extremity strength seems normal but she has a burning pain along the lateral margin of her right foot which is worse when she bends or lifts, but she can still perform those activities.

Your exam reveals:

Well-healed surgical scar, spine straight.
Tenderness at the lumbosacral junction and right buttock.
Valid maximal ranges of motion:
Lumbar flexion -- 55 degrees (sacral flexion angle 50 degrees).
Lumbar extension -- 20 degrees.
Lumbar right lateral flexion -- 20 degrees.
Lumbar left lateral flexion -- 15 degrees.
Normal lower extremity muscle strength and reflexes.
Decreased light touch and pin prick sensation over the lateral margin of the right foot and distal leg.

47. What is the patient's impairment for specific disorders?

48. What is the patient's impairment for range of motion?

49. What is the patient's impairment for sensory loss in terms of:
    a. lower extremity?
    b. whole person?

50. What is the total whole person impairment?

For questions 51 - 53, use the attached Lower Extremity worksheet to record your answers on.

A 27 year old environmental services worker slips on the ice while removing snow from the sidewalk and suffers a torn right medial meniscus. Arthroscopy is performed and a partial tear of the medial meniscus is identified and repaired. The patient completes all required physical therapy. He is able to return to this job and has no significant impairment at work. He notes that occasionally he must exercise some caution when playing baseball or hiking in the mountains, but otherwise does not have significant interference in his daily activities. His range of motion is active flexion to 140º and extension to 10º.

51. What is the total range of motion impairment for this patient?

52. What additional impairment, if any, would you assign him?

53. What is the total lower extremity and whole person impairment for this case?

Figure 83. Lumbar Range of Motion

Movement	Description	Range					
Lumbar Flexion	T12 ROM						
	Sacral ROM						
	True lumbar flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum true lumbar flexion angle						
	% impairment						
Lumbar Extension	T12 ROM						
	Sacral ROM						
	True lumbar extension angle						
	±10% or 5°?	Yes ☐	No ☐	(add Sacral flexion and extension ROM and compare to tightest Straight Leg Raising Angle)			
	Maximum true lumbar extension angle						
	% impairment						
Straight Leg Raising, Right	Right SLR						
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Right						
Straight Leg Raising, Left	Left SLR						
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Left						
Lumbar Right Lateral Flexion	T12 ROM						
	Sacral ROM						
	Lumbar right lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar right lat flexion angle						
	% Impairment						
Lumbar Left Lateral Flexion	T12 ROM						
	Sacral ROM						
	Lumbar left lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar left lat flexion angle						
	% Impairment						
Lumbar Ankylosis in Lateral Flexion	Position			(Excludes any impairement for abnormal flexion/extension motion)			
	% Impairment						
Total Lumbar Range of Motion Impairment (*add* all ROM impairments if no ankylosis: use ankylosis impairment value if ankylosis is present)							

Straight-Leg Raise (SLR) Validity Test for Lumbar Flexion

1. Max SLR Right _____
   Max SLR Left _____
2. Tightest SLR _____ **(Select smallest number from Step 1)**
3. Sum of best **sacral** flexion and **sacral** extension measurements _____ (Selected from above). Use **Sacral ROM,** NOT true lumbar flexion/extension angles.
4. Tightest SLR - (Sacral flexion + Sacral extension)
   (Step 2) _____ - (Step 3) _____ = _____
5. If the above (#4) *is greater than 10 degrees, lumbar flexion is invalid*
6. **For final invalidation,** claimant must have 2 sets of 3 measurements on 2 separate dates (total of 12).
   - See Level II Accreditation Curriculum (ROM of Spine) (Impairment Rating Tips)
   - DOWC Website: www.colorado.gov/cdle/dwc

Figure 84. Spine Impairment Summary

Impairment	Cervical	Thoracic	Lumbar
1. Due to Specific Disorders (Table 53 or Table 54)			
2. Range of Motion			
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength			
4. Other–From Sec. 3.4 p. 101			
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)			
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)			

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	% Impairment	*Guides* Page No.
a.		
b.		
c.		
d.		
e.		

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

Level II TEST QUESTIONS
Pre-test

VISION, HEARING, ETC. QUESTIONS

54. In regard to determining impairment of the visual system, which of the following statements is correct?

    a) Uncorrected visual acuity is used to calculate the impairment rating.
    b) Measurement of only the injured (impaired) eye is sufficient to complete the rating process.
    c) Visual field, acuity, and ocular motility must all be measured to determine visual impairment.
    d) Pseudophakia and aphakia do not affect the rating, other than the resultant decrement in visual acuity.

55. With regard to determining impairment of the auditory system, which of the following statements is correct?

    a) Hearing must be measured in both ears to determine auditory impairment.
    b) Hearing loss at 1000 Hz is weighted more heavily than is hearing loss at 500 Hz in determination of hearing loss.
    c) The only frequencies required to calculate hearing loss for auditory impairment are 500 Hz and 1000 Hz.
    d) Determining impairment of the auditory system requires measurement of speech discrimination.

56. With regard to determining impairment for temporomandibular joint (TMJ), which of the following is correct?

    a) Meniscal derangement is a 3% whole person rating per side.
    b) Functional evaluation with regard to dietary limitation is the exclusive factor on which to base ratings.
    c) An individual with a normal diet and persistent clicking and pain bilaterally has a 5% whole person rating.
    d) TMJ ratings for unilateral meniscal derangement must involvement assessment of the meniscus on the opposite side.

57. In properly rating speech impairment:

    a) audibility is more important that intelligibility.
    b) objective measurement with electronic devices is critical.
    c) there is no reason to take a history.
    d) the examiner must have normal hearing.

58. Which of the following factors is **not** required to determine upper digestive tract impairment?

a) anatomic loss or alteration of the digestive tract.
b) consideration of current weight versus ideal weight.
c) a specific and detailed description of the diagnosis.
d) description of dietary restrictions.
e) symptoms and signs of organic UG1 disease.

Level II TEST QUESTIONS
Pre-test

PULMONARY/CARDIOVASCULAR

A 58 year-old male has a history of non-productive cough for five years and slowly progressive dyspnea on exertion. He is dyspneic walking one block on level ground at his own pace. He is a lifelong non-smoker.

For the past 25 years he has worked for a mining company, mostly underground near the mine face, with exposure to hard rock dust. Review of annual chest radiographs over the past 10 years show diminished lung volumes, rounded opacities throughout the lungs which are most prominent in the upper lung zones, and some areas of coalescence of the opacities, that suggest complicated silicosis.

At examination the man weighed 87.5 kg, and was 172 cm tall. He had end-expiratory crackles throughout both lungs. There was no clubbing or cyanosis. Tuberculin skin test was non-reactive.

The patient's observed pulmonary function data were:

FVC	3.30 liters
FEV_1	2.50 liters
FEV_1/FVC %	76
D_{CO}	20.0 m1/min/mm Hg
V_{O2} max was	25 ml/(kg min)

59. Based on the tables in Chapter 5 of the AMA Guides, Third Edition, Revised, what percent of predicted is this patient's Dco?

a) 63%
b) 67%
c) 77%
d) 85%

60. Based on the information above, what is this patient's level of impairment of the whole person due to lung disease?

a) Class 1 (0%)
b) Class 2 (10-25%)
c) Class 3 (30-45%)
d) Class 4 (50-100%)

61. Which one of the following additional pieces of information would be helpful in assessing his level of impairment?

a) History of alcohol use
b) Sputum culture for mycobacteria
c) Cumulative dose of silica dust exposure
d) Race

62. Why did the physician who performed the impairment rating obtain an exercise capacity test?

a) Because the patient had a chest radiograph that looked worse than his spirometry and Dco.
b) Because the patient's symptoms were worse than his spirometry and Dco suggest.
c) Because the AMA Guides recommends exercise testing for all patients with interstitial lung disease.
d) Because the AMA Guides recommends exercise testing for all patients with respiratory system disease.

63. Four physiologic measures are routinely relied upon in estimating pulmonary impairment. These four measures are:

a) FEV_1, FVC, FEF_{25-75}, D_{CO}
b) FEV_1, FVC, FEV_1/FVC ratio, D_{CO}
c) FEV_1, FVC, D_{CO}, arterial blood gas analysis
d) Spirometry, D_{CO}, arterial blood gas analysis, exercise capacity testing.

64. Accurate and reproducible measurements are critically important to the physiologic assessment of pulmonary impairment. In order to be used, a laboratory's measurements of spirometry and D_{CO} must:

a) be shown to correlate with results from a reference laboratory.
b) not vary more than 15% upon repeat testing.
c) conform to 1993 American Thoracic Society (ATS) standards
d) be performed by a NIOSH-certified respiratory technician.

65. Some diseases, such as asthma, produce respiratory impairment that is not directed related to lung function. Which of the following statements about impairment assessment of asthma is correct?

a) Unless there is severe impairment, the individual can return to work.
b) Post-bronchodilator spirometry values should not be used in rating impairment because they underestimate the severity of asthma.
c) D_{CO} is the most important physiologic measurement in asthma.
d) Impairment due to asthma should be assessed when optimally treated using post-bronchodilator spirometry values.

66. Symptomatic limitation plays an important role in determining impairment due to cardiovascular disease. As such, physicians must take a careful history focusing on symptoms at rest and with different levels of activity, and classify the patient using a functional classification system. Which of the following statements about functional classification is correct?

a) Class I patients are asymptomatic at all times and may be without objective disease.
b) Class II patients are asymptomatic at rest but are limited by even mild activity.
c) Class III patients are symptomatic during normal activities.
d) Class IV patients are symptomatic at all times.

67. A cardiovascular disease sometimes can cause multiple problems, each of which could contribute to impairment. For example, valvular heart disease can produce a low cardiac output state as well as arrhythmias. When rating impairment in such situations, you should:

a) assign an impairment rating for the causative heart disease process only.
b) assign an impairment rating for each heart-related problem and then apply the combined values chart.
c) assign an impairment rating for each heart-related problem and then take the sum of these ratings.
d) assign an impairment rating for the most life threatening component of the patient's heart condition.

68. The timing of an impairment rating can make a big difference in the estimated level of impairment. Which of the following is the best reason to postpone the determination of impairment due to a cardiovascular disease?

a) Patient has recently been placed on a new heart medication.
b) The patient has fully recovered from heart surgery.
c) The patient is not a surgical candidate.
d) The patient's symptoms vary from day to day.

Level II TEST QUESTIONS
Pre-test

DERMATOLOGICAL SECTION

69. The five classifications of dermatological impairments are determined by which of the following considerations:

    a) Range of motion and sweat deficits secondary to scars, requirements for treatment, signs and symptoms of dermatological disease.
    b) Limitations in activities of daily living, requirements for treatment, sensory deficits over the affected area.
    c) Limitation in activities of daily living, sign and symptoms of skin disease and psychological affects of the disease.
    d) Signs and symptoms of skin disease, requirements for treatment, and limitations on activities of daily living.
    e) Signs and symptoms of skin disease, affects on daily living activities, disfigurement considerations, and requirements for treatment.

70. After being hit on both ears multiple times, a boxer suffers a bilateral cauliflower ears (significant deformity of both outer ears which affects the cartilage). He should receive:

    a) a 5% rating based on a class 1 impairment for skin disease
    b) a 7% rating based on class 2 facial abnormality.
    c) a 5% impairment based on class 1 facial abnormality.
    d) a 4% based on a 2% deformity of each outer ear.
    e) no impairment as patient has disfigurement only.

For question 71, write the question number and your hand written answer in the white space at the bottom third of your <u>computer answer sheet</u>.

71. A 35 year old mechanic develops a contact dermatitis from cutting oils. The dermatitis clears when he is removed from contact with the oils and treated for the skin condition. He now wears appropriate gloves whenever he is using cutting oils. Nevertheless, he continues to have occasional exacerbations when he unexpectedly comes into contact with cutting oil left on machine parts. These episodes require treatment and limit day to day activities when they occur. What is his rating?

72. Scars should be rated in the following manner:

    a) A psychological rating should be added to the functional deficits.
    b) A psychological rating should be a major portion of the scar impairment.
    c) Range of motion and sensation deficits should be rated and added.
    d) Strength and sensation deficits should be added to the psychological rating.
    e) Facial scars should be rated according to the E.N.T. chapter.

Level II TEST QUESTIONS
Pre-test

MENTAL AND BEHAVIORAL DISORDERS SECTION

73. Which of the following tests would **not** be useful in determining the patient's diagnosis?

a) TAT
b) MMPI
c) Rorschach
d) WAIS/R

74. Which one of the following is **not** included in the Social Security Administration's "listings of mental impairment"?

a) Social functioning
b) Adaptation to stressful circumstances
c) Motivation
d) Activities of daily living
e) Concentration, persistence, and pace

75. Which of the following areas best defines the nature of a workers' compensation psychiatric examination?

a) acceptance of the impairment as obtained from test results
b) obtaining relevant information about the worker's daily life activities
c) performance of a detailed mental status examination not always required

76. In most cases, according to the AMA Guides 3rd edition, a patient who has chronic pain will have:

a) a significant impairment.
b) a moderate impairment.
c) a measurable impairment.
d) little or no impairment.

77. Which of the following must be established before a mental impairment rating is provided?

1. physical impairment
2. the requirement for post-MMI medication use
3. psychological test results showing abnormal functioning
4. a DSM diagnosis
5. a permanent change in function

a) all of the above
b) 2, 3 & 4
c) 3, 4 & 5
d) 4, 5

e) 5 only

78. The following steps may be included in a psychiatric impairment rating. List all of the required steps in the correct order.

1. Average all four area of function scores.
2. Average the two highest scores for the four areas of function
3. Convert the final total score to an impairment using the category conversion table.
4. Determine MMI
5. Establish a diagnosis using the most current edition of the DSM
6. Rate the subcategories under each area of function from 0 – 6
7. Rate the subcategories under each area of function from 1 – 100%
8. Average all the subcategories in each of the 4 areas of function.
9. Average the 2 highest subcategories in each area of function.

a) 5, 4, 7, 8, 1, 3
b) 5, 4, 6, 8, 1, 3
c) 4, 7, 9, 2, 3
d) 5, 4, 6, 9, 2, 3

79. How many impairment ratings have you performed using the AMA Guides 3rd edition (revised)?

a) None
b) 1-6
c) 6-10
d) More than 10

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ANSWERS TO PRETEST

ADMINISTRATIVE/LEGAL

Question	Answer	Curriculum section/subsection
#1	C	Admin/Responsibilities of a physician at the first visit, Follow-up patient visits & patient at MMI
#2	D	WC Reports/Work restrictions
#3	C	Admin/Patient No Shows
#4	D	Admin/Billing for Services
#5	B	Interprof. Code/Sec. 1:3 – the role of the expert ….. unbiased & objective
#6	A	Admin/Responsibilities of a physician at the first visit
#7	C	Admin/Utilization Review Program (UR)
#8	D	WC Reports/Maximum Medical Improvement Admin/Determination of Maximum Medical Improvement (MMI)
#9	B	Admin/Responsibilities of a physician at the first visit
#10	A	Admin/Responsibilities of a physician at the first visit
#11	C	Admin/Patient at MMI
#12	A	Ethical Standards/In Patient/Doctor relationships in workers' compensation cases
#13	C	Admin/Patient at MMI
#14	A	Admin/Authorized Medical Care & Billing
#15	D	Admin/Authorized Medical Care & Billing

NEUROLOGICAL SECTION

#17. Refer to Table 13, page 44, Brachial plexus deficits of the upper trunk, C-5, C-6. Sensation deficit equals 25%, motor deficit equals 70%.

#18. To determine the sensation deficit, use Table 10, page 42. A grade 3 deficit is determined from the history. Thus, 25% is multiplied by a number in the range of 26-60%. This equals an upper extremity deficit of 6.5% and 15%.

#19. use Table 11, page 42. Given the history, this reveals a motor deficit of grade 2 which has a range of 1-25%. 70% is multiplied times a number in the range of 1-25%. This is equal to a range of 0.7-17.5% for an upper extremity rating.

#20. The upper extremity rating is between 8-30%. This is determined by using the Combined Values Chart and combining the sensory and motor deficits determined in questions 2 and 3. The whole person rating is between 5% and 18%. This is determined by converting the upper extremity rating to the whole person rating using Table 3, page 16.

#21. Review Table 1, page 109, B. Brain, under "Complex Integrated Cerebral Functions," and page 105, "Emotional Disturbances." The patient's description would appear to be in the impairment rating of 20-45% in both of these areas. This is because the patient is unable to carry out daily activities such as simple mathematics in order to balance his checkbook and he is also unable to operate under normal circumstances due to his emotional outbursts. Remembering that only the highest rating can be given one of these areas, the patient now can receive a rating between 20% and 45% but not over those categories within the neurological section.

#22. Turning to the psychiatric section, we may now only consider areas that were not considered under the neurological section. Since we have already considered the emotional disturbances and complex integrated functions of this patient, we can only consider post traumatic stress disorder. The post traumatic stress disorder appears to have a minimal effect in his life as it merely precludes driving in the mountains. Thus, after completing the mental impairment rating worksheet, you may have an impairment based on the conversion chart of around 5%. The mental impairment of 5% would be combined with the neurological rating.

COMMENT: It may be possible to make the argument that you choose not to consider the emotional disturbances under the neurological section and used the psychiatric section instead. If you were to rate the case in this manner, you would need to be able to prove that the emotional disturbance portion is not due to neurological brain damage but is rather due to the psychiatric diagnosis involved. According to the limited case description, this argument would not apply in the case given.

#23. To determine the total whole body rating, you would combine the rating from the neurological section, which is in the range of 20-45%, and the 5% rating from the psychiatric section. This would result in a rating in the range of 24-48% whole person.

Q.	Ans.	Curriculum section/subsection.
#24	B-False	Neurological/The Brain
#25	D	Neurological/Peripheral Spinal Nerves after case example and in RSD section
#26	C	Neurological/Peripheral nerves
#27	C	Neurological/Auditory

#28	E	Neurological/The Brain and Spinal Cord
#29	B	Neurological/Peripheral Spinal nerves

UPPER EXTREMITY

Question	Answer	Curriculum section/subsection.
#30	D	Upper Extremity/general principals AMA Guides --- page 54
#31	E	Upper Extremity/Range of Motion – Thumb & other digits
#32	B	Upper Extremity/Digital impairments/Sensory loss of the digits
#33	C	Upper Extremity/Other disorders of the upper extremity

#34 Use Fig.17, page 25. Amputation impairment = 45% of the finger

#35 Use Table 4, page 20, partial loss of the full length of digit for the ulnar nerve = 15% of the thumb

#36 Use Table 1, page 15. 15% of the thumb = 6% hand. 45% little finger = 5% hand.
Add 5% + 6% = 11% hand

#37 Use Fig.32, page 32. Extension loss = 1%
Flexion loss = 2%
Add 1% + 2% = 3% upper extremity

#38 Use Table 2, page 16, 11% hand = 10% upper extremity
Combine 10% and 3% to equal 13% upper extremity.

LOWER EXTREMITY AND SPINAL SECTION

Question	Answer	Curriculum section/subsection
#39	C	Lower Extremity & Spine/Essential elements of the exam
#40	D	Lower Extremity & Spine/Range of Motion testing of the spine
#41	C	Lower Extremity & Spine/Essential elements of the exam
#42	B	Lower Extremity & Spine/Range of Motion testing of the spine
#43	C	Lower Extremity & Spine/Diagnoses related factors
#44	A	Lower Extremity & Spine/Diagnoses related factors
#45	D	Lower Extremity & Spine/Diagnoses related factors
#46	E	Lower Extremity & Spine/Range of Motion testing of the spine

#47 10% whole person rating - use table 53 page 80, II E/surgically treated disc with residuals.

#48 Use Tables 60 and 61, page 98, 2% for lumbar flexion, 2% for lumbar extension, 1% for right lateral flexion, 2% left lateral flexion. Add percentages to equal 7% whole person.

#49 1.3% - 3% lower extremity rating which is equal to a 1% whole person rating - to determine this, use Table 49. The total sensation loss is equal to 5%. This is rated using Table 10, page 42, as a grade 3 rating. Thus, the impairment is equal to (26% - 60%) x 5% or 1.3% - 3% range for the lower extremity. Use Table 46, page 72, to convert this percentage into a whole person rating. Any number in this range would be equal to a 1% whole person rating. The physician has the discrimination of using any number within the range presented above.

#50 17% whole person rating. This rating is determined by combining the 10% diagnosis related rating with a 7% range of motion and the 1% sensation deficit using the Combined Values Table on page 254 of the AMA Guides.

#51 The answer is 5% of the lower extremity. Use Table 39, page 68, which shows a 4% deficit for flexion and a 1% deficit for extension adding to a 5% deficit of the lower extremity.

#52 0-10%, To determine this, use Table 40, page 68. The range given is 0-10% for a 1 meniscal tear. Since this patient has residual signs, he would at least deserve a 1% rating, minimally and a limit of a 10% rating given the table.

#53 6-15% of the lower extremity equals 2-6% of the whole body. The 5% range of motion deficit is combined with the diagnosis related deficit of 1-10%. Using the Combined Values Chart, this would equal a lower extremity deficit of between 6% and 15%. To convert this to a whole body rating, use Table 46, page 72. The conversion results in a range of 2-6%.

VISION, ETC.

Question	Answer	Curriculum section/subsection.
#54	C	Vision, etc/The Vision system
#55	A	Vision, etc/Auditory impairment
#56	B	Vision, etc/Nose, Throat & related structures
#57	D	Vision, etc/Speech
#58	C	Vision, etc/Gastro Intestinal system

PULMONARY/CARDIOVASCULAR

Q.	Ans.	Page Ref.	Comments
#59	A	AMA Guides page 122	D_{CO} is 20.0/32.0 x 100 = 62.5% of predicted, based on Table 6 for 172 cm tall 58 year old male; n.b. FVC is 3.3/4.43 = 72.5%; FEV1 is 74%; FEV1 is 2.5/3.52 = 71%
#60	B	Curriculum pages 94-95; Also AMA Guides Applying spirometry & Dco In estimation of permanent impairment example	FVC is between 60-79% predicted. D_{co} is between 60 – 79% Predicted; FEV_1 and FEV_1/FVC% are less pertinent in a case Of interstitial lung disease; VO_2 max is between 20 – 25 ml/(kg·min) These parameters fit Class 2 (10-25% Mild Impairment)
61#	D	Curriculum page 95 Applying spirometry & D_{co} in estimation of Permanent impairment	Alcohol use is irrelevant to this lung disease. Cumulative dose May be of interest, but whatever the dose was, it was sufficient To produce this disease and is not pertinent to rating impairment. Sputum culture for mycobacteria has no direct impact on Impairment rating but may be clinically important to some patients with silicosis because of the increased risk of tuberculosis. Race is important. The predicted values for spirometry are based on Caucasians. "The spirometry measurements for black persons and persons of Asian descent tend to be smaller than for whites of the same age, height, and sex. Therefore, the evaluating physician should multiply the predicted value by 0.9 before comparing a black of Asian individual's values to the appropriate tables.")

#62	B	Curriculum Pages 96-97 Exercise capacity	One of the principal indications for performing exercise capacity testing as part of impairment assessment is when the patient's symptoms are at variance with results of spirometry and D_{CO}. This patient reports a great deal more dyspnea than is reflected by his mild impairment of spirometry and D_{CO}. Chest radiograph is known to correlate poorly with spirometry and D_{CO}. The AMA Guides do not recommend exercise testing for all patients with interstitial disease, and it is not part of the routine assessment of all patients with respiratory system disorders.
#63	B	Curriculum pages 94-95 Applying spirometry & Dco in estimation of Permanent impairment	FEF_{25-75} is poorly reproducible and not relied upon in assessing impairment, although it is commonly calculated and reported as part of spirometry. Arterial blood gas analysis is specifically not included in routine assessment of pulmonary impairment. It should be included only when there is suspicion of hypoxemia or hypoxemia-related health effects.
#64	C	Curriculum Page 93 Physiologic testing	It would be problematic to have every laboratory show interlaboratory comparability or hire only NIOSH-certified spirometry technicians. 15% variability is unacceptably high for either spirometry or D_{CO}.
#65	D	Curriculum pages 98-99 Respiratory Impairment not directly related to lung function	If a patient with occupational asthma develops sensitivity to a causative agent in the workplace, removal from that environment is important regardless of the severity of disease. Post-bronchodilator spirometry values are often not helpful in assessing impairment in asthma, giving a picture of how well the patient does with optimal medical treatment. D_{CO} is often normal or slightly supranormal in patients with asthma, making it an insensitive indicator of severity of disease. Direct measures of airflow (spirometry) are more helpful. Occupational asthma usually warrents referral to a specialist. Also see attached American Thoracic Guidelines.
#66	C	Curriculum page 100 Cardiovascular system impairment	Class I patients are asymptomatic but have evidence of cardiac disease and may have symptoms with very heavy physical activities, explaining why impairment in this class ranges from 0-10%. Class II patients are asymptomatic during normal activities but show limitation with heavy physical exertion. Class III patients are symptomatic during normal activities. Class IV patients are significantly limited during normal activities and may or may not have symptoms at rest.
#67	B	Curriculum pages 100-102 Cardiovascular system impairment/Valuation of permanent impairment of cardiovascular system	Heart disease and its secondary effects should be rated by assessing each component separately (eg. valvular disease, arrhythmias, hypertension) and then applying the combined valued chart on p.254-256 of the AMA Guides, 3rd edition revised.
#68	A	page 102/Cardiovascular system impairment/Level of treatment	

DERMATOLOGICAL SECTION

Q.	Ans.	Curriculum section/subsection.
#69	D	Skin/Impairment classification for skin diseases
#70	D	Skin/Disfigurement/Scar/Impairment classification for skin diseases See AMA Guides ENT section, Chapter 9, Section 2, page 179
#71	1-5%	Skin/Classification for skin diseases
#72	E	Skin/Scars

MENTAL AND BEHAVIORAL DISORDERS

Q.	Ans.	Curriculum section/subsection.
#73	D	Mental/Usefulness of Psychological Tests
#74	C	Mental/Social Security assessment methods
#75	B	Mental/The Psychiatric Examination
#76	D	AMA Guides page 252 Mental/Pain
#77	D	Mental/Introduction
#78	D	Mental/Determination of Impairment Rating/Mechanics of the mental impairment rating

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COLORADO
Department of Labor and Employment

Division of Workers' Compensation

Desk Aid #11 – Impairment Rating Tips: *Updated July 2020*

Please review the following recommendations when assigning impairment ratings:

General Principles

1. **Impairment Ratings Based on Objective Pathology:** Impairment ratings are given when a specific diagnosis and objective pathology is identified. *(Reference: C.R.S. §8-42-107(8)(c))* In cases with multiple symptoms, the clinician must determine whether separate diagnoses are established which warrant an impairment rating *OR* the impairment rating provided for a specific diagnosis incorporates the accompanying symptoms of the patient.

   For example, in **shoulder cases with accompanying neck pain**, the clinician must determine whether an additional objective work-related Table 53 cervical pathology qualifies for a rating *OR* the symptoms the patient has are those expected from the shoulder pathology and do not qualify for an additional rating.

2. **Impairment Rating for Workers Who Have Undergone an Invasive Treatment Procedure:** The rating physician should keep in mind the *AMA Guides, 3rd Edition (rev.)* definition for impairment: "The loss of, loss of use of, or derangement of any body part, system, or function." Given this definition, one may assume any patient who has undergone an invasive procedure that has permanently changed any body part has suffered a derangement. Therefore, the patient should be evaluated for an impairment by a Level II Accredited Physician. Although the rating provided may be zero percent, it is essential that the physician perform the necessary tests, as outlined in the *AMA Guides, 3rd Edition (rev.)* for the condition treated, in order to justify the zero percent rating.

3. **Range of Motion Measurements:** Only *active* range of motion measurements should be used to determine impairment. The examiner should not assist the patient when obtaining spinal or extremity range of motion. For extremities, passive range of motion may be measured to assess the *validity* of active range of motion measurements. See the Spinal and Extremity Rating section for a more detailed discussion.

4. **Impairment Rating "Rounding":** Although the *AMA Guides* allows rounding of an impairment rating to the nearest whole number ending in 0 or 5, the Division recommends rounding up or down to the nearest whole number when presenting the *final rating.* A number ending in .50 or above should be rounded up. Fractional ratings are not acceptable.

5. **Worksheets:** Make sure to attach all applicable worksheets to the narrative report and include this information to all legally concerned parties. The Lower Extremity and Mental Impairment forms created by the Division and the spinal and upper extremity forms found in the *AMA Guides* are required. If a spinal impairment rating is provided, both Figure 84 and the appropriate spinal range of motion worksheet are required. If you need to send an addendum or a response to an incomplete notice, make sure you copy all parties. Zero percent impairment based on physiological findings is considered an impairment rating and requires worksheets. *Note that you do not have to provide worksheets if you are not giving a rating for the injury(s) in question.*

6. **"Grover Meds" and Impairment:** If continuing treatment or medications are ordered in a case post MMI ("Grover Meds"), and that treatment was not being given prior to the onset of the work related injury or condition, there may be a reasonable assumption that there has been a permanent change in a body part under the definition of impairment in the *AMA Guides, 3rd Edition (rev.)*. Therefore, it is incumbent on the physician to perform a full assessment for impairment at the time MMI is determined. This should not be interpreted to say that all persons receiving Grover Meds necessarily qualify for an impairment rating. *If the rating physician provides an assessment of zero or no impairment, yet orders post-MMI treatment, this shall be justified in the physician's closing report.*

7. **Facial Disfigurement vs. Scars:**
   - Facial disfigurement should be rated using the *AMA Guides 3rd Edition (rev.)* Section 9.2 (p. 179).
   - Scars should be rated using the *AMA Guides 3rd Edition (rev.)* 13.6 (p.225) *(Reference: Level II Accreditation Curriculum, Dermatology section)* if the physician deems appropriate, or have the claimant go to the ALJ to request an award.
   - Note: Providers should be aware that not all scars qualify for an impairment rating and the claimant may request an award for scars from an ALJ. *Colorado Revised Statutes (C.R.S. §8-42-108)*

8. **Complex Regional Pain Syndrome/Reflex Sympathetic Dystrophy (CRPS/RSD):** The Division recommends using the spinal cord table *(Table 1, - Section A, pg. 109, AMA Guides)* for determining impairment, however the peripheral nerve tables may be used if the evaluator deems them more appropriate *(Table 14, pg. 46; Table 51, pg. 77, Table 10 pg. 42, AMA Guides)*. In unusual cases where severe vascular symptoms cause additional impairment of ADLs the physician may choose to combine additional impairment for the vascular tables with the neurological impairment. *(Table 52, (p.79) and Table 16, (p. 47), AMA Guides)*. Range of motion should not be used, when it is accounted for in the neurologic portion of the rating.

9. **Tinnitus:** The *AMA Guides, 3rd Edition (rev.)* (p.110) suggests that 3-5% impairment may be added to the binaural hearing impairment for tinnitus. Tinnitus impairment can only be provided when a hearing impairment is documented. The hearing impairment need not be from the current injury. Later editions of the AMA Guides have clarified that impairment for tinnitus is added to the total binaural hearing impairment rating before it is converted to whole person. If adding impairment for tinnitus to monaural hearing impairment, the 3-5% would be added to the monaural hearing impairment percentage. The rating is completed by converting to whole person.

10. **Headaches:** Headaches that qualify for a separate work-related impairment rating should be rated using the Episodic Neurological Disorders section in Table 1- Section B (Chapter 4, p. 109). It is important to remember that if the individual has a closed head injury the highest applicable rating from this table is the only rating used. If the headache rating is to be combined with another body part, the rater must be very careful not to rate the activities of daily living deficits in both impairment areas.

11. **Rating Abdominal Hernias:** There are three classes of hernia impairment *(AMA Guides, 3rd Edition (rev.), p. 196)*. Remember that to qualify for a rating in any class at the time of MMI there must, at a minimum, be a "palpable defect in the supporting structures of the abdominal wall."

Apportionment

1. **Apportionment of Prior Conditions:** Asymptomatic conditions cannot be evaluated for prior impairment. Only previously symptomatic conditions should be considered for apportionment. (Reference: Askew v. Industrial Claim Appeals Office, 927 P.2d 1333 (Colo. 1996); Rule 12).

For Workers' Compensation injuries occurring on or after July 1, 2008:

- For prior **non-work related** injuries: To apportion prior injuries that are non-work related, they must have been *identified, treated, and independently disabling* at the time of the current work related injury. If the prior non-work related injury was not independently disabling at the time of the current injury, you may not apportion.

- For prior **work-related** injuries: The Physician may provide an opinion on apportionment for any pre-existing work related permanent impairment to the same body part using the *AMA Guides, 3rd Edition, (rev.), where medical records or other objective evidence substantiate a pre-existing impairment*. Any such apportionment shall be made by subtracting the pre-existing impairment as it existed at the time of the subsequent injury or occupational disease from the injured worker's total impairment as calculated according to the *AMA Guides, 3rd Edition (rev.)*. The subtraction is best accomplished by deducting at the specific appropriate levels before combining all portions of the rating. The Physician shall explain in their written report the basis of any apportionment. (Rule 12-3) It is critical that complete information is provided, particularly the current total impairment—both apportioned and unapportioned.

- The 'current total rating' should represent the person's current and past impairment rating. You may **not** apportion by estimating the percentage attributable to the prior injury or disease; (i.e.: "50% of this impairment was pre-existing.")
- You *must have medical documentation* for the information that substantiates the previous work-related rating.
- Utilize "Desk Aid 10: Evaluation of Previous Spinal ROM Impairment *(Reference: Level II Curriculum, Normalization/Apportionment and Spine sections)* to calculate the *past* injury's range of motion if a prior apportionable spinal condition exists and no range of motion values are available.

2. **Age:** Because age is considered in the calculation of benefits which the injured worker will receive, there is no additional apportionment for age when awarding impairment ratings (Reference: C.R.S. §8-42-107).

Spinal Rating

1. **Table 53 and Application of Spinal Range of Motion:** In order to be assigned a spinal rating, the patient must have objective pathology and impairment that qualifies for a numerical impairment rating of greater than zero under Table 53. Spinal range of motion impairment must be completed and applied to the impairment rating only when a corresponding Table 53 diagnosis has been established. (References: Spine section of the *AMA Guides, 3rd Edition (rev.)*; Level II Accreditation Curriculum, Spine and Pelvis Impairment).

    - In unusual cases with established severe shoulder pathology accompanied by treatment of the cervical musculature, an isolated cervical range of motion impairment is allowed if it is well justified by the clinician. Otherwise, there are no exceptions to the requirement for a corresponding Table 53 rating.

2. **Table 53 and 0% Impairment Rating with Six Months or More Treatment:** Whenever 6 months of treatment of the spine has occurred and a Table 53 zero percent rating is assigned, the physician must provide justification for the zero percent rating, based on the lack of physiologic findings. The rating physician shall be aware that a zero percent rating in this circumstance implies that treatment was performed in the absence of medically documented pain and rigidity.

3. **Proper Use of Table 53:** Section I (fractures) of Table 53 is the only section where combining definitions A (compression) and B (posterior elements) is allowed. For Sections II, III and IV, the available sub values cannot be combined. These sections are meant to be *progressive* values. For example, if a patient suffered a lumbar strain with six months of treatment, they would receive 5% impairment (Section IIB). If several years later they suffered another lumbar strain, the rating would still be 5% per Section IIB of Table 53, not 5% (previous injury) combined with 5% (current injury). If this patient suffered a herniated disc as their current injury, the total rating would be 7% as they would have progressed to Section IIC on Table 53. To apportion the rating, 5% is subtracted from 7% to give a 2% rating.

4. **Impairment Ratings for Invasive Spinal Procedures**: The following procedures are considered surgical and should be rated under Table 53 using II (D) or II (E):
    a. IDEA (intradiscal electrothermal annuloplasty)
    b. Coblation of the nucleus pulposus
    c. Microdiskectomy
    d. Permanent spinal stimulator placement requiring laminotomy
    e. Vertebroplasty or kyphoplasty
    f. Artificial disk placement
    g. Removal of Spinal Hardware: Procedures for removal of spinal hardware are rated under Table 53 II (G) 1, or Table 53 II (G) 2 for subsequent surgical procedures.

5. **Not Rated as Surgical Spinal Procedures:** The following are *not* rated as surgical procedures using Table 53:

    a. Diagnostic or therapeutic spinal injections
    b. Intrathecal drug pumps
    c. Removal of spinal stimulator not requiring laminectomy

6. **Rhizotomy:** Rhizotomy is also currently known as a Radiofrequency Medial Branch Neurotomy or RF Neurotomy. It is not considered a surgical procedure under Table 53. Rhizotomies should be rated using II(C). A rhizotomy causes only minimal anatomic disruption and may not be permanent. In order to perform a rhizotomy the condition must meet the diagnostic criteria required in the Low Back Pain Medical Treatment Guideline (see section D). The degree of pathology required to perform a rhizotomy is deemed equivalent to moderate to severe degenerative changes at the facet joint. Most commonly two or more spinal levels are performed with rhizotomy procedures to assure coverage of the appropriate nerves.

   To rate rhizotomies the total number of levels at which a rhizotomy is performed should be divided by 2. A two-level bilateral or unilateral rhizotomy receives a rating of II(C) because II(C) accounts for the initial two levels. Three or four-level rhizotomies receive a II(C) plus (II) F 1% for the additional levels. Five or six-level rhizotomies receive II(C) plus II (F) 2% for the additional levels.

   For example, the Table 53 rating for rhizotomies at 4 lumbar levels would be 8% (II-C of 7% for the first two levels plus II-F of 1% for the additional two levels). Similarly, the Table 53 rating for 6 cervical levels would be 8% (II-C of 6% for the first two levels plus II-F of 2% for the additional four levels). Bilateral rhizotomies at the same spinal level do not receive any additional rating.

7. **Rating for SI Joint Dysfunction:** Patients who continue to have SI joint symptoms, and thus qualify under the "six months of medically documented pain and rigidity with or without muscle spasm," Table 53 terminology should be rated as Table 53 II (B) in most circumstances. The appropriate spinal range of motion impairment must be combined with this.

8. **Vertebral Fractures:** An operatively treated vertebral fracture should be rated under Table 53 section IV (A) or (B). When more than one level has been fused, additional levels are *added* at 1% each using IV(C). If there are additional vertebral fractures which are not operatively treated, these should be rated under section I and the ratings from I and IV should be *combined* for a total Table 53 rating. (If multiple non-operative fractures are present and rated under section I, these are combined as directed on Table 53.)

9. **Using Table 53 to differentiate between II (B), (C) and (F) regarding x-ray findings:** The mere presence of findings by diagnostic imaging is not a sufficient justification to rate a nonspecific spinal complaint. This applies to the use of II (C) and II (F). The physician should not rate findings by diagnostic imaging *if they have not been clearly defined as contributing significantly to the patient's condition*. Physicians should be aware that in the asymptomatic population, disc bulges, annular tears or high intensity zone areas, and disc height loss are commonly reported in the lumbar spine from 40 – 60% of the time depending on the condition and study (*Reference: Medical Treatment Guidelines, Low Back Pain)*. In the cervical spine, the prevalence of disc degeneration or loss of signal intensity on MRI is greater than 50% in the 50 years and older asymptomatic population. Cervical disc bulging and posterior disc protrusion, while not rare, are more commonly symptomatic than in the lumbar spine due to the smaller cervical spinal canal. Mild reduction in the cross-sectional spinal cord may be seen without myelopathy in patients older than 40 years *(Reference: Medical Treatment Guidelines, Cervical Spine Injury)*. Therefore, the existence of these anatomic findings cannot be considered pathological unless there are clear physiologic ties and correlation with clinical findings in an individual patient.

Asymptomatic moderate to severe lumbar facet degeneration has also been reported in 30% or more of the population 55 or older, but is uncommon in the younger population. Clear disk extrusion and nerve impingement are much less frequent in asymptomatic individuals. Symptomatic disk extrusion/herniation is rated under II(C). Due to these discrepancies between x-ray findings and pathological conditions, it is incumbent on physicians to carefully examine and apply other diagnostic tests as appropriate to identify the true pain generators in a patient and plan their treatment and impairment rating accordingly.

10. **Table 54:** Although Tables 53 and 54 are mutually exclusive and cannot be used in the same rating *(Reference: Level II Accreditation Curriculum, Spine and pg. 81 AMA Guides)*, remember that in some cases with ankylosis as a pre-existing condition, Table 54 can be used for apportionment. In such cases, Table 53 can be used for the current rating and Table 54 can be used for the previous rating.

11. **Straight-Leg Raise Check (SLR) for Invalidation of Lumbar Flexion:** The SLR check applies to lumbar flexion only. Of the SLR measurements for each leg, the evaluator records the MAXIMUM SLR for each leg. Then the 'tightest' or the 'lowest' of these two maximum measurements for the right and left leg is used to compare to the sum of sacral flexion and extension *(Reference: Level II Accreditation Curriculum, Measuring Spinal Range of Motion)*. If the SLR check is invalid, the claimant must be given another visit to repeat the range of motion (see below, Invalidation of Spinal Range of Motion.)

12. **Invalidation of Spinal Range of Motion (cervical, thoracic, lumbar):** To invalidate spinal range of motion impairment, due to internal or straight leg raise validity, or for physiologic reasons, claimants must have two visits. Two sets of three measurements must be taken on each visit (12 measurements total).

13. **Lumbar Flexion Impairment:** When using Table 60, you must first reference the sacral flexion angle (1st column), then the true lumbar flexion angle to calculate the impairment percentage for true lumbar flexion. *(Reference: Table 60, pg. 98, AMA Guides, 3rd Edition (rev.))*.

14. **Angle of Minimum Kyphosis, Thoracic Flexion Worksheet:** Angle of minimum kyphosis must be recorded in addition to the other measurements. This is because it is the GREATER of the two impairments (between thoracic flexion and angle of minimum kyphosis) which is used in the rating *(Reference: Section 3.3d, pg. 91, AMA Guides, 3rd Edition (rev.))*.

15. **Only Unassisted, Active Range of Motion Measurements Can Be Used in Impairment Rating:** The *AMA Guides to the Evaluation of Permanent Impairment, 3rd edition (rev.)*, uses only active, patient-initiated range of motion to determine spinal impairment. *(AMA Guides 3rd edition (rev.) (p.18, 55, 81))*. Any form of "assisted range of motion" is not part of the impairment rating process. If there is a significant, non-physiologic difference between the active and passive ranges of motion, physicians should have the patient stretch and repeat the measurements. When the physician believes the active range of motion obtained is non-physiologic, the physician is encouraged to inform the patient of their impression and the fact that it may affect the patient's rating, before obtaining another trial of measurements. *If repeat measurements continue to appear significantly non-physiologic, the physician may use measurements obtained by other providers when there is reason to believe the measurements were performed according to the AMA Guides standards.*

Extremity Ratings

1. **Rating of Extremities Using Contralateral Joint/ "Normalization":** In some cases, the contralateral joint is a better representation of the patient's pre-injury state than the *AMA Guides* population norms. The 3rd Revised Edition has little commentary on this procedure, however the 5th Edition and the Division consider it reasonable to compare both extremities when there are specific conditions which would make the opposite, non-injured extremity serve as a better individual baseline. (This procedure is ***not* an apportionment procedure** as it does not reflect a prior pathologic condition with impairment; therefore, avoid using the term "apportionment" when referring to this process. This process can be termed "normalization.") Therefore, when deemed appropriate, the physician may subtract the contralateral joint ROM impairment from the injured joint's ROM impairment. (An example would be a patient with limited knee flexion due to obesity.) However, this subtraction should not be done if the contralateral joint has a known previous injury because that joint may not reflect the 'normal' ROM for that individual. Make sure an explanation of the methodology and rationale are present in the report.

2. **Shoulder Surgery:**
   - Resection arthroplasty referred to in the *AMA Guides 3rd Edition (rev.)* is used only for partial resection of the humeral head, a procedure rarely performed currently.
   - Neither resection nor implant arthroplasty values should be used for a distal clavicular resection/excision. Providers may assign up to 10% upper extremity impairment for distal clavicular resection/excision.
   - In general, subacromial arthroplasty (a term used to describe acromioplasty or subacromial decompression) should be rated using range of motion. There are some situations when loss of range of motion alone may not adequately represent the extent of the impairment following subacromial arthroplasty. In those cases, up to 10% upper extremity impairment may be assigned. Make sure the rationale is provided in the report.

3. **Partial Shoulder Joint Replacement:**
   - Total implant arthroplasty of the shoulder is a 30% rating per The *AMA Guides 3rd Edition (rev.)* Total arthroplasty is defined as an implant arthroplasty of the humeral head accompanied by resurfacing of the glenoid with any substance including metal, polyethylene or soft tissue graft.
   - If a hemi-arthroplasty is done, the rating will generally be 20%. Hemi-arthroplasty includes resurfacing of the humeral head via a resurfacing cap or stemmed humeral replacement. The 20% rating should be combined with range of motion impairment and any peripheral nerve impairment ratings. Crepitus and synovial changes should not be rated as their ratings would be duplicative and the surgical procedure has presumably eliminated those anatomic derangements.

4. **Partial Knee Joint Replacements:** The *AMA Guides 3rd Edition (rev.)* allows a 20% rating for an optimally placed full knee arthroplasty. If a partial knee joint replacement is performed, the rating will generally be for a hemiarthroplasty or 10% for the knee replacement. The physician should take into account any additional pathology present in that knee ratable under Table 40 and combine it with the 10%. Degenerative changes for which the arthroplasty was performed should not be rated since the surgical procedure has presumably eliminated those anatomic derangements. Range of motion is always recorded and combined with Table 40 ratings.

5. **Ankle and Foot Impairment Ratings:** The *AMA Guides, 3rd edition (revised)* does not include impairment ratings for foot and ankle fractures or arthritis. When documentation of functional change

justifies a rating, choose a value from the given range that you deem appropriate for the injury. The following impairments must be **combined** with the appropriate range of motion impairment:

Fractures:

Calcaneal

Mild malalignment	0-4% *foot* impairment
Moderate malalignment	5-8% *foot* impairment
Severe malalignment	9-14% *foot* impairment

Talus

Mild malalignment	0-4% *lower extremity* impairment
Moderate malalignment	5-7% *lower extremity* impairment
Severe malalignment	9-13% *lower extremity* impairment
Non union	11-25% *lower extremity* impairment

Ankle with malalignment (including tibial pilon)

Mild malalignment	0-7% *lower extremity* impairment
Moderate malalignment	8-15% *lower extremity* impairment
Severe malalignment	16-25% *lower extremity* impairment

Metatarsal Fractures:

1st & 5th metatarsals

Non union	0-10% *foot* impairment
Malalignment	0-7% *foot* impairment

2nd-4th metatarsals

Non union	0-5% *foot* impairment
Malalignment	0-4% *foot* impairment

LisFranc: Applies to 1st and 2nd TMT joint as these are the most involved and symptomatic

Mild malalignment	0-6% *foot* impairment
Moderate malalignment	7-14% *foot* impairment
Severe malalignment	15-21% *foot* impairment

Arthritis:

Tibiotalar Joint	0-20% *lower extremity* impairment
Subtalar Joint	0-10% *lower extremity* impairment

Midfoot Arthritis

Talonavicular	0-11% *foot* impairment
Calcaneocuboid	0-5% *foot* impairment

1st-5th TMT joints • 1st -3rd TMT joint will result in more functional impairment versus 4th and 5th because these are weight bearing joints	0-11% *foot* impairment
1st MTP joint	0-30% *great toe* impairment

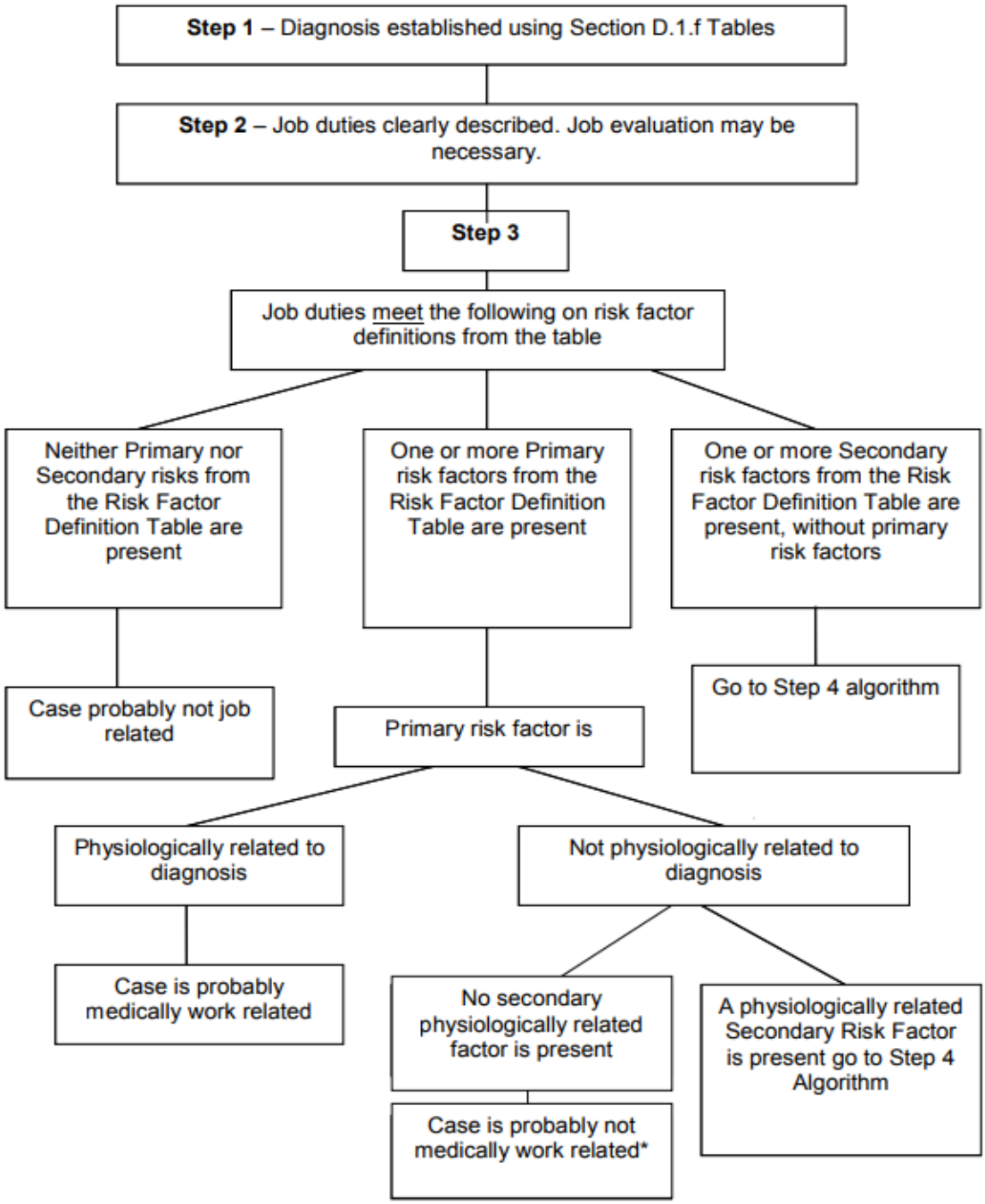
6. **<u>Peripheral Nerve Injuries Resulting from Cumulative Trauma:</u>** All peripheral nerve injuries should be rated under the peripheral nerve tables in the *AMA Guides 3rd Edition (rev.)*: for upper extremity – Table 14 (p. 46), and for lower extremity – Table 51 (p. 77). The peripheral nerve values are then multiplied by percentages in Table 10 (grading scheme sensory function-p. 42), or Table 11 (grading scheme for motor function-p. 42). Range of motion or the CTD rating system should only be used if there is a separate and distinct non-neurologic cumulative trauma diagnosis (such as DeQuervain's).

7. **<u>Musculoskeletal Cumulative Trauma Disorders:</u>** Cumulative trauma staging is used to rate permanent impairment of specific disorders when no other rating is available in the *American Medical Association (AMA) Guides to the Evaluation of Permanent Impairment, 3rd Edition (rev.)*. Specific diagnoses must be provided prior to the assignment of an impairment rating. Remember that the terms 'cumulative trauma disorder,' 'repetitive motion syndrome,' 'repetitive strain injury,' and other similar nomenclatures are umbrella terms that are not acceptable diagnoses. CTCs can be staged only after taking a thorough history and performing an appropriate physical examination (refer to the History Taking & Physical Examination section of the Medical Treatment Guidelines). The factors included in the CTC Staging Matrix are:

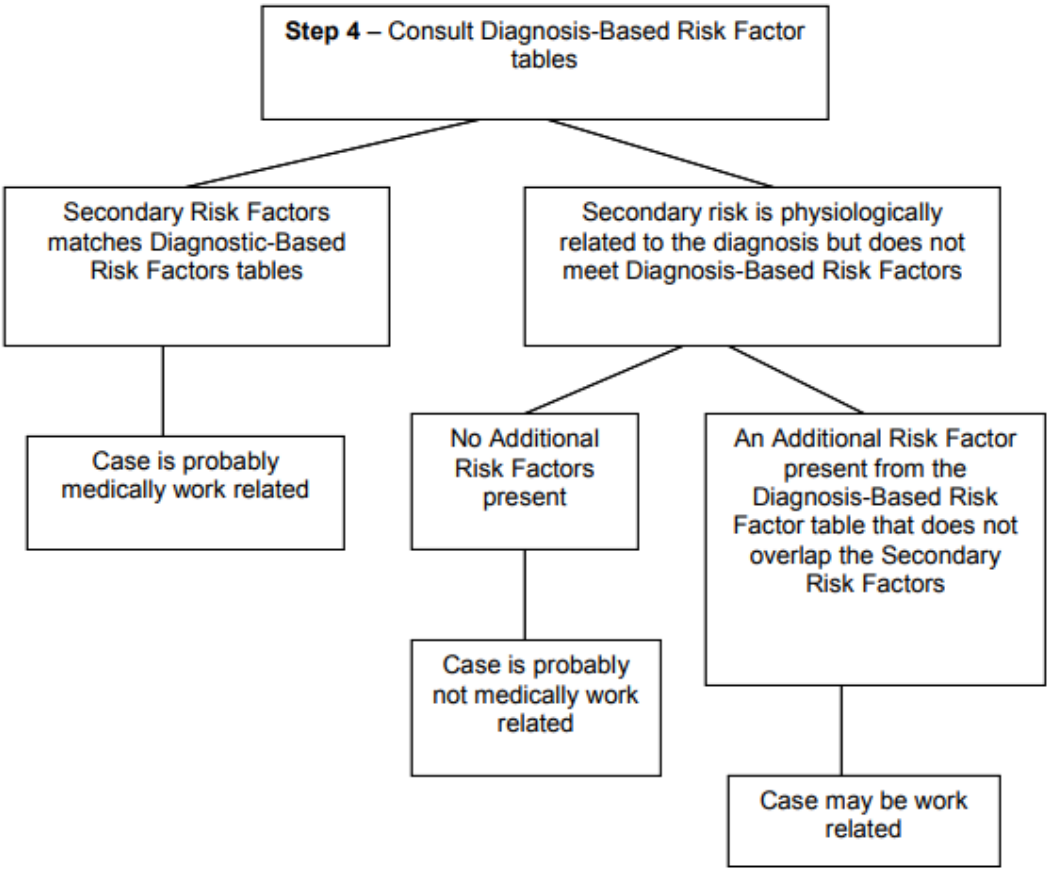
   A = History and Physical Examination.
   B = Response to Modification of Specific Aggravating Factors.
   C = Activities of Daily Living.

   The following algorithm from the Cumulative Trauma Medical Treatment Guideline will help determine medical causality for cumulative trauma disorders.

c. **Algorithmic Steps for Medical Causation Assessment**



Algorithmic Steps for Medical Causation Assessment continued



*In the case of an aggravation or exacerbation of a pre-existing condition, the provider will need to make an individualized causation decision based on the presence of other accompanying conditions.

Cumulative Trauma Staging Matrix: The staging matrix is only used to rate a cumulative trauma condition diagnosis when there is no impairment rating under range of motion, specific diagnosis, and/or peripheral nerve injuries in the *AMA Guides, 3rd Edition (rev.)*. It is expected that objective signs on physical examination will correlate with subjective symptoms. The primary presenting joint that corresponds to each specific established diagnosis should be rated. Descriptions of painful conditions without clear physiologic findings may not be rated using this chart. Examples include pain in the elbow or other upper extremity joint and myofascial pain disorder.

The signs and symptoms are staged in the Cumulative Trauma Staging Matrix as:

Stage 1 = Minimal.
Stage 2 = Mild.
Stage 3 = Moderate.
Stage 4 = Severe.

Stages 3 and 4 frequently may be associated with other secondary symptoms of chronic pain such as sleep alteration or depression.

Use of the Staging Matrix: The staging number chosen from the "Impairment Grades at MMI" row is multiplied by the upper extremity impairment rating value for the appropriate joint found in Table 17, p.48 of the *AMA Guides to the Evaluation of Permanent Impairment, 3rd Edition (rev.)*.The upper extremity rating is converted to whole person. The table is not intended to distinguish between permanent partial disability paid under § 8-42-107(2) and -107(8), C.R.S.

Cumulative Trauma Staging Matrix

	Stage 1 (Minimal)	Stage 2 (Mild)	Stage 3 (Moderate)	Stage 4 (Severe)
History and Physical Examination	1 to 2 symptoms with signs identified on history and supported by physical examination with consistency of subjective and objective findings	2 or more symptoms with signs identified and supported by physical examination with consistency of subjective and objective findings	3 or more symptoms with signs identified and supported by the physical examination with consistency of subjective and objective findings	3 or more symptoms with signs identified and supported by physical examination with consistency of subjective and objective findings
	AND	AND	AND	AND
Response to Modification of Specific Aggravating Factors	Symptoms and/or signs improve or resolve with modification of specific aggravating activity	Symptoms and/or signs may improve but will not resolve completely with modification of specific aggravating activity	Symptoms and/or signs do not improve with modification of the specific aggravating activity, but may improve with elimination of the specific aggravating activity	Symptoms and/or signs do not improve with modification or elimination of the specific aggravating activity
	AND	AND	AND	AND
Activities of Daily Living (ADLs)	Minimal problems with ADLs	Noticeable aggravation by more difficult ADLs	Significant interference with most ADLs	Severe limitations of ADLs
Impairment Grades at MMI (See Note above to obtain Multiplier)	0-10%	11-20%	21-30%	31-40%

DIME Panel Physician Notes

1. **DIME Application- Body Parts Listed:** Although an impairment rating may not be provided for a condition listed on the DIME application, all issues and/ or body parts listed must be acknowledged and addressed in the narrative section of the DIME report.

   For most conditions that have been treated under the claim, an impairment evaluation must be performed even if you do not believe the condition is work related. Refer to DIME Panel Physician Notes #7, "Declaring Condition is Not Related to Injury."

   Worksheets are not required if no impairment evaluation for that body part was performed because it was not treated as part of the claim. *Keep in mind, a zero percent rating implies that treatment was performed and a rating was calculated according to the AMA Guides, therefore, worksheets must be provided.*

2. **DIME Physicians Must Perform Complete Assessments and Exams, including All Applicable Measurements:** As a Division Independent Medical Examiner you are required to perform your own examination of the claimant and ensure that all required measurements are performed and documented on the appropriate worksheets. If another medical professional (such as a physical therapist) performs range of motion measurements or other specialized tests and assessments (such as an audiogram), it is the responsibility of the physician to ensure that the medical professional performs the assessments in accordance with the *AMA Guides* and other professional standards. After completing the evaluation, in rare occurrences, you may decide that another physician's impairment rating better reflects the condition being evaluated. Examples include instances where you find another physician's range of motion more physiologically credible than the measurements you have obtained or when another physician has more training in a particular area than you do, such as a psychiatrist. *If you then decide to adopt another physician's rating, you should discuss in your report your own findings and clearly justify the reasons for using another physician's rating.* If you do not provide such a discussion your report will be returned as incomplete.

3. **MMI Status:** Be specific about MMI status and date of MMI. If you agree with an authorized treating physician regarding MMI status and date, state the name of that doctor as well as the MMI date. If you decide to provide a different date of MMI, please provide a discussion of your reasoning. If you find the case is not work related and therefore is not awarded an impairment rating, it is still useful to provide information as to whether future care may be necessary for that condition.

4. **Impairment when "Not at MMI":** Remember that a DIME is a legal/medical proceeding and you are being asked to provide specific information. *If the party requesting the DIME has asked that impairment be addressed, and if you find the patient **not at MMI** for that work-related injury, you should nevertheless provide a rating for that injury.* This information can be used by the parties for negotiations, settlement, or to help assess further treatment needs.

5. **Recommendations for Additional Treatment:** Division Independent Medical Examiners frequently recommend further treatment. Remember that the statute defines MMI as: "A point in time when any medically determinable physical or mental impairment…has become stable and when no further treatment is reasonably expected to improve the condition. The *requirement for future medical maintenance* which will not significantly improve the condition or the possibility of improvement or deterioration resulting from the passage of time shall not affect a finding of [MMI]."

   To avoid ambiguity and controversy, we recommend that independent medical examiners consider that previous rulings have suggested that a recommendation for therapies that present a reasonable prospect for improving physical function may be viewed as evidence that the claimant's condition is not stable, and the resulting impairment may not be permanent. Therefore, such treatment recommendations are inconsistent with MMI.

   - Treatment which is provided merely to *maintain* the claimant's condition by preventing deterioration, or to relieve continuing symptoms, is not inconsistent with MMI and may be awarded as maintenance care.
   - The DIME physician must clearly indicate whether the treatment recommendations in the DIME report are intended as maintenance treatment or if the treatment could affect the MMI date given.
   - If the examiner indicates that the treatment recommended would affect the MMI date, the examiner should also indicate whether the patient would be at maximum medical improvement as of a specific date in the event the patient refused to undertake the treatment suggested by the examiner. That "specific date" may or may not be the date of your exam.

6. **Diagnostic Tests and MMI:** There are times when a patient is placed at MMI but the examiner will nevertheless order a diagnostic test. If there is a reasonable possibility that the results of a diagnostic test (such as an MRI or EMG) will change the patient's MMI status, then in most instances, the patient will not be at MMI. If the diagnostic test is necessary only to provide impairment rating information, this would not affect the MMI date. The examiner is still expected to give an impairment rating that can be used by the parties for negotiations, settlement, or to help assess further treatment needs.

7. **Declaring Condition is Not Related to Injury:** Division Independent Medical Examiners may declare a condition is not work-related. This may occur despite the fact a payer has accepted a body part or diagnosis as part of the claim, treatment has occurred, and MMI has been declared by the authorized provider. If this situation arises, an impairment rating must be provided in the report or as an addendum to the DIME report. This information will often be used by the parties for further negotiations and/or settlement of the claim. However, only the work-related impairment ratings are to be recorded on the DIME Examiner's Summary Sheet.

8. **Accepting Spinal ROM (cervical, thoracic, lumbar) from Other Providers:** When a physician performing a Division IME finds range of motion measurements invalid (due to SLR check or for physiologic reasons) the physician may accept invalidated measurements from other reports in lieu of bringing the claimant back for a second set of measurements. However, the physician must report his/her own initial set of measurements on the appropriate worksheet. *(Reference: Level II Accreditation Curriculum, Measuring Spinal Range of Motion)*

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Introduction to Level II Accreditation

Objectives:

1) Explain the Level II Accreditation and Level II Re-accreditation processes and the steps for revocation.
2) Apply the steps for completing a workers' compensation case with an impairment rating.
3) Distinguish between impairment and disability in the workers' compensation system.
4) Describe the components of a comprehensive impairment rating report.

Level II Accreditation

Level I Accreditation is required before Level II Accreditation as of January 1, 2018 (Rule 13).

Level II Accreditation is required to evaluate an injured worker who is eligible for an impairment based on their condition. Level II Accreditation can only be obtained by a physician (MD or DO).

- The authorized treating physician (ATP) providing primary care does not need to be Level I or II Accredited to determine maximum medical improvement (MMI) or that no impairment is present.
    - **Attention:** The WC164 must always be signed or co-signed by the physician

- If a non-Level II treating provider determines that MMI has been reached and that an impairment (or a condition likely to qualify for an impairment rating) is present, that provider must refer the patient to a Level II Accredited physician within 20 days. If this referral is not made, the insurance company has an additional 20 days to refer to a Level II Accredited physician.
    - **Attention:** An injured worker who requires permanent work restrictions has, by definition, suffered a permanent loss of function, and should be evaluated for impairment by a Level II Accredited Physician.
    - **Attention:** Impairment Rating Tips (Desk Aid 11) indicates that "any patient who has undergone an invasive procedure that has permanently changed any body part….should be evaluated for an impairment rating by a Level II Accredited Physician."

Probationary Period

In order to become accredited, the physician must pass the Level II Accreditation examination. At that time, the physician will be placed on a probationary period for a maximum of 12 months. **During the 12-month probationary period, the physician is required to submit three impairment rating reports**; these must be deemed sufficient by the Division. *We encourage physicians to submit these reports immediately after passing the examination to ensure that they are producing sufficient impairment ratings*. Once three reports have been deemed sufficient, the probationary period ends. Accreditation will expire January 31st of the third calendar year following the year the physician passed the Level II Accreditation examination, Rule 13-2 (B)(8). If the physician fails to submit three sufficient impairment rating reports within 12 months from the examination date, then **their accreditation will expire.**

Level II Re-Accreditation:

In order to maintain accreditation, the physician must re-accredit every three years. Requirements for re-accreditation include the completion of the Level II re-accreditation course and submission of one impairment rating report, deemed sufficient by the Division (which may be a Division Independent Medical Examination report) by January 31st of the re-accreditation year.

Revocation of Level II Accreditation:

The Division of Workers' Compensation Director, with input from the Medical Director, may revoke accreditation on the following grounds:

- Failure to comply with the provisions of the Workers' Compensation Rules of Procedure and all relevant statutes,
- Misrepresentation on the application for accreditation, or
- A unanimous recommendation to revoke accreditation by the Division of Workers' Compensation utilization review committee.

Refer to Rule 13-4 regarding Sanctions Upon Accreditation (found under the Resources tab in this curriculum).

Steps for Completing a Case

1. Determine Maximum Medical Improvement (MMI): This is the time at which the condition "has become stable and when no further treatment is reasonably expected to improve the condition." C.R.S § 8-40-201(11.5).
2. If permanent impairment is present, perform an impairment rating:
    - Using the Level II Curriculum, *AMA Guides, 3rd edition, revised*, and Impairment Rating Tips (Desk Aid 11).
    - Convert the impairment rating to the whole person level.
    - Provide a narrative report and include all applicable worksheets.
    - Complete the closing WC 164 form.
    - Submit the report, worksheets and WC 164 form to the insurer and patient.

Impairment
Impairment is the loss of, loss of use of, or derangement of any body part, system or function. Overall, impairment is based on functional deficits directly related to the workers' compensation injury/disease.

Disability differs from impairment and includes the loss or absence of the capacity of an individual to meet personal, social, or occupational demands, or to meet statutory or regulatory requirements.

Impairment Rating Concepts

- Impairment ratings are based on changes in physiologic function, not job duties.
    - A pianist may be disabled from her profession due to an index finger loss, however, her impairment rating would be the same as an internist with the same index finger loss. This is because *impairment is based on changes in physiologic function, not earning capacity.* The internist may be able to return to her profession without loss of salary and the pianist may not be able to return to her chosen profession.
- A patient who has undergone an invasive procedure or requires permanent work restrictions may or may not have an impairment rating per the *AMA Guides, 3rd Edition (revised).* The patient should be evaluated for impairment by a Level II Accredited Physician although the impairment rating may be 0%.
    - The physician must perform the necessary tests, as outlined in the *AMA Guides, 3rd Edition (revised)* for the condition treated in order to justify the 0% rating.

Impairment Rating Reports
An impairment rating report provides adequate communication to all parties regarding the origin of the impairment rating and how it reflects the functional loss of the patient. An impairment rating is the basis for paying permanent partial disability. The report may be used in a medical/legal context; therefore, maintenance care and permanent work restrictions must be addressed. If the impairment rating differs from another physician's rating, it is important to include a discussion of the differences and why this particular rating method was chosen.

Be sure to reference the exact tables and figures used from the AMA Guides, unless it is already noted on the impairment rating worksheet.

Per Rule 5-5, when submitting the final impairment rating report to the insurer, it must include the narrative (written report), WC 164 form and all applicable worksheets.

- All required forms and worksheets are available on the Division's website.
- Some impairment ratings may not have required worksheets for submission. In these cases, as with all cases, discussion of how the impairment rating was calculated must be included in the narrative report.

Impairment Rating Report Elements: The required elements of a sufficient impairment rating report include:

History of injury

- A description of the mechanism of injury, or work-related disease and exposure
- All body parts or organ systems that have been treated under the claim
- Pertinent diagnostic tests that are essential to establishing the pathological basis of a disease or injury
- A short summary of the treatment and/or surgical procedures
- Current occupation and work level
- Description of the patient's functional ability to perform ADLs (self-care and personal hygiene, communication, normal living postures, ambulation, travel, nonspecific hand activities, sexual function, sleep and social and recreational activities)
    - ADLs are the basis for impairment rating and should be used as a guide for determining the proper percentage when a physician is given a range of values for the impairment rating.
- A list of the medical records reviewed when a non-treating physician performs the impairment rating
    - In the narrative report, it is important that the provider clearly differentiates between history gleaned from the medical record review and the history taken by the provider during the patient visit.

Attention: Under the federal Genetic Information Nondiscrimination Act of 2008 (GINA), family medical history can be construed as "genetic information" which is protected and confidential, and should not be disclosed to the injured worker's insurer or employer without a specific release. Similarly, psychological and/or psychiatric records are afforded a special protected status among health records. Physicians and medical clinics are covered by Health Insurance Portability and Accountability Act (HIPAA), but insurers and employers are **not**. Thus, it is advisable to avoid including family health history or psychological/psychiatric history in records provided to the insurer/employer in a workers' compensation case unless you have the patient's written authorization.

Physical Examination

- Examine all pertinent body parts treated under the claim.
- Record specific range of motion values for any joints or spinal areas pertinent to the claim.
- Document specific neurological findings and palpation findings (trigger points, muscle spasms) in detail.
- Note inconsistent findings.

Diagnosis

- Explain which diagnoses are work-related by discussing the relationship between the patient's diagnosis and the work-related exposure.
    - The assessment process requires estimating the risk of developing the suspected diagnosis as a result of the actual exposure of the patient.
    - Legally, the physician must state the medical *probability* that the patient's diagnosis and physical findings are related to the work-related exposure.
        - Probability = greater than 50% likelihood
        - Medically *possible* indicates the work-related injury is less than or equal to a 50% likelihood that the injury is work-related.
- In most cases the causality of the injury is no longer under dispute at the time of MMI.
- The final diagnoses must correspond with the impairment rating using the pathologically related sections of the *AMA Guides, 3rd Edition, revised.*
    - i.e. Radial nerve injury would be rated using the motor section of the radial nerve and not range of motion of the wrist.

Medical Causation

In order to determine causation of an injury or condition, an assessment must include a detailed description of the incident reportedly causing the injury, or a complete description of all activities which may have contributed to the patient's symptoms. Physicians should establish a differential diagnosis and assess the medical probability of the mechanism of injury and diagnosis. Remember, the physician should only determine if the relationship between the mechanism of injury and diagnosis corresponds.

- For example, the location in which the injury occurred should not be a deciding factor of medical causation. If the injury occurred in the employer's parking lot, it is not for the physician to decide if the injury is work related due to the location of the injury. The physician's role is to determine the medical probability between the mechanism of injury and the established diagnosis.

Most medical treatment guidelines include statements regarding causation of injuries. Refer to the appropriate guideline for the correlation between the mechanism of injury and diagnosis.The History Taking and Physical Examination section of the Colorado Medical Treatment Guidelines can assist in determining the causation of different injuries and diseases.

Maximum Medical Improvement (MMI)

- Establish that MMI is present **for all areas under treatment (including mental impairment)**.
    - The date the patient reached MMI must be included.
    - Improvement that may only occur with the passage of time does not affect MMI.

- Recall that MMI is the “point in time when any medically determinable physical or mental impairment as a result of injury has become stable and when no further treatment is reasonably expected to improve the condition." C.R.S § 8-40-201(11.5)
- It is appropriate to declare the patient at MMI if further treatment would improve the patient’s condition, but the **patient chooses not to** undergo such treatment.
    - For example, if a surgery is recommended for a patient to improve their condition and reach MMI, but the patient chooses not to have surgery, then the patient would be placed at MMI and an impairment rating would be performed. In this case, the physician must rate the worker as they are at the time of MMI. Physicians cannot rate based upon possible changes to the patient’s condition over time or as if the surgery/other treatment that was recommended had actually been undertaken.

Note: Discharge for Non-Medical Reasons (including Non-Compliance) does not mean the patient is at MMI.

- It is the physician’s decision to declare MMI. If a patient fails to attend medical appointments, or is otherwise non-compliant with treatment recommendations, an insurer cannot ask the provider to place the patient at MMI. The law provides various procedural mechanisms for an insurance carrier to bring a case to closure in such situations. These mechanisms are designed to ensure that a patient has been given the requisite due process afforded by the Workers’ Compensation Act.
- When discharging a patient for non-medical reasons, it is important to follow the guidance in Desk Aid 15, Discharge for Non-Medical Reasons, in order to ensure compliance with C.R.S. § 8-43-404(10)(a).

<u>Impairment Rating</u>

- Expressed as a percentage of the whole person who is considered impaired.
- Used as a basis for paying for permanent partial disability.
- All diagnoses identified should be addressed.
- All required Division or AMA Guides worksheets should be included with impairment rating report (along with closing WC 164).
    - Spinal range of motion worksheets and the summary form (Figure 84) must be included when rating the spine.
    - Some medical conditions do not have impairment worksheets, so be sure to explain the rating in detail.
- All components of the rating should be included in the report (i.e. joint, extremity, and whole person ratings).
    - Convert and report all impairments to “whole person” per the AMA Guides protocols. Conversion tables are provided in the Guides (i.e., Table 1, p.15 converts digit to hand impairment).
- Relevant impairment values are combined using the Combined Values Chart, located in the AMA Guides pp. 254-256.

    - Combining is an algebraic method for combining numbers to avoid exceeding 100%.
        - Combining is required because an arm is equal to 60% of the whole person and a leg 40% of the whole person.
        - If all four (4) extremities were lost and the impairments were added this would equal 200%, but the value cannot exceed 100%.
    - Combine ratings at the same anatomic level and in the same extremity category (i.e., a shoulder upper extremity rating can only be combined with a hand rating after the hand rating is converted to upper extremity).
    - Combine multiple impairments at the same anatomic level in order from highest to lowest as a general principle to ensure reproducibility of your rating.
- Exceptions to the Combination Rule include:
    - Impairments for ranges of motion at the same joint are added instead of combined.
    - Impairments for all ranges of motion of the thumb are added instead of combined.
    - Total impairment ratings for each digit are added to establish a hand impairment.

<u>Work restrictions</u>

- If permanent work restrictions are necessary, provide specific physical details of the restrictions.
    - Examples include:
        - limited work hours
        - physical limitations
        - tool use
        - hot/cold working environments
- <u>If no work restrictions are applicable</u>, clearly state this in the work restrictions section (do not simply omit the section).

<u>Maintenance care</u>

- Maintenance Care is that which is needed after MMI, if applicable, to sustain the patient's functional status.
    - For example, a future total knee replacement may be anticipated in a case of severe degenerative arthritis.
- Maintenance Care should be detailed and comprehensive as it may have significant implications with regards to future settlements.
    - A settlement for "full and final" may include compensation for future medical care identified as maintenance care. The insurer would not later pay for additional medical treatment if the case was settled *in full.*
    - It is essential that the patient and insurer understand the future medical liability for the life of the patient (i.e., severe degenerative knee osteoarthritis that may require a total knee replacement in the future).

- If your medical opinion is that no maintenance care is needed/applicable, clearly state this in the maintenance care section of your note (do not simply omit the section).
    - **Attention:** Indicating “no maintenance” may close the door on access for future treatments. If the patient is likely to need follow up treatment, it may be appropriate to suggest that the patient may return for follow up as needed over a specific timeframe.

Billing for Impairment Rating Reports

- The total fee for a calculated Permanent Impairment Rating includes:
    - the office visit,
    - complete history and physical examination,
    - review of all medical records*,
    - determining MMI,
    - completing all required measurements,
    - referencing all AMA Guide tables to determine the impairment rating, and
    - completion of the closing WC 164 form.
- The following codes are used when billing for a completed impairment rating report:
    - Z0759: completion of an impairment rating by the primary authorized treating physician
    - Z0760: completion of an impairment rating by a referred Level II Accredited physician (the patient is not a previously established patient to **that physician**)
    - **Attention:** Do **NOT** use Z0752 (Closing WC 164). Reimbursement for the impairment rating includes the closing WC 164.
- If the patient has to return for repeat spinal ROM, the physician should use the appropriate CPT code to bill for the visit.
- All physicians providing consulting services for the completion of a whole person impairment rating shall bill using the appropriate Evaluation and Management (E&M) consultation code and shall forward their portion of the rating to the authorized treating physician determining the combined whole person rating.

  *If extensive medical records take greater than 1 hour to review, a separate code can be billed. A separate report is created by documenting each record reviewed, specific details of the records reviewed, and the dates represented by the records reviewed. The separate record review can be billed under special reports for written reports (DOWC Code Z0755) and **requires prior authorization** from the payer.

Sample Report of an Impairment Rating Evaluation

Patient Name: Construction Chris
Date of Evaluation: June 2, 2014
Date of Injury: September 12, 2013
Insurance: We Make You Better Inc.
Employer: We Build It
Job Title: Construction Worker
Injury: Left knee ACL and partial medial meniscus tear

Subjective Injury History:
Mr. Chris is a 30-year-old male construction worker who presents today for an injury to his left knee which occurred on 9/16/2013 when he was on duty as a construction worker for We Build It. He reports that he lifted a 75# load, twisted his body with the left foot planted, and felt a pop with immediate burning pain in his left knee. He indicates that he initially had swelling, pain, and episodes of locking, catching and "giving way" with ambulation. He also reported instability of the left knee. Mr. Chris indicates that he sought care with Injuries R Us, and he was instructed in the use of anti-inflammatories, an Ace compression wrap, crutches and was also instructed to rest, ice and elevate. He rested his knee over the next 2 days and the pain improved. Mr. Chris reports that an MRI was ordered, which showed an ACL tear. He underwent surgery with Dr. Pluto, and slowly recovered with the help of physical therapy.

Today he reports that he is doing well except for mild soreness in the knee after a lot of activity or a long day at work. He reports that he is able to tolerate regular duty at work without any problems. He denies any locking, catching, crepitation, or instability. He reports good strength and there is no interference with his ADL's. He also reports that he was able to kneel while gardening recently without any issues. He is not taking any medications for the knee injury.

Treatment History (Records Review):
Mr. Chris was seen by PA Goodsoul at Injuries R Us on the date of injury, 9/16/2013. The physical examination demonstrated swelling with effusion, limitations in ROM: Flexion to 80 degrees and extension to 10 degrees. Positive for tenderness to palpation over the anterior knee and popliteal fossa. Positive McMurray's, valgus stress test, Lachman's, and pivot-shift, but these were also difficult to assess secondary to pain with all testing.

An MRI confirmed a torn ACL and partial medial meniscus tear. He was sent to physical therapy to decrease edema, increase ROM and strength. He was advised to continue with ice, elevate the left leg, and continue with anti-inflammatories. A follow-up appointment was set for the next week with the treating physician for further evaluation and consideration for surgery. He was given work restrictions that included limiting standing/ walking to 30 minutes per hour, keeping the leg elevated for the remaining time, no lifting and no shifts greater than 4 hours.

The following week he followed up with the treating physician at Injuries R Us. Mr. Chris reported continued pain in the left knee with the ability to now ambulate without crutches for short distances, but that he felt the knee was unstable and continues to lock. His physical exam was unchanged with continuation of restrictions in ROM.

A referral was made to Bones & Joints Orthopedics where he was seen by Dr. Pluto on 10/15/13 with the recommendation for ACL reconstruction and meniscus surgery due to his occupational requirements.

8 weeks post surgery, Mr. Chris followed up with the orthopedic surgeon and reported great progress in physical therapy with independent ambulation, decreased edema and increased strength. He was able to ascend and descend steps fluidly and comfortably. Dr. Pluto instructed the patient to follow up with him in one month and to continue follow up appointments with Dr. Star, the authorized treating physician.

9 months post surgery Mr. Chris graduated from physical therapy with instructions for a home exercise program for increasing the left lower extremity strength and proper lifting, pivoting techniques. He returned to work full duty without restrictions.

Physical Examination:
Left knee demonstrates a vertical scar, which is well healed. No swelling is noted at this time. No tenderness to palpation including the medial and lateral joint lines. No crepitation is noted. Gait is nonantalgic and WNL.
Lower extremity strength is 5/5 including flexion and extension of the knee.
Lachman's (-)
Anterior Drawer (-)
Posterior Drawer (-)
Valgus stress (-)
Varus stress (-)
Grind Test (-)
ROM: Flexion: 126
Extension: 0
Sensation is intact for the lower extremity

Assessment/Diagnosis: Left knee ACL reconstruction with partial medial meniscectomy.

Date of MMI: He is being placed at MMI today, July 31st, 2014. Patient's condition is stable at this time and additional treatment is not likely to improve his condition.

Impairment Rating: Impairment has been assessed according to the *AMA Guides to the Evaluation of Permanent Impairment, 3rd edition revised*.

Using Table 40 (p. 68) I have assigned 10% impairment for the ACL and 5% for the torn meniscus, which combines to 15% lower extremity impairment.
Using Table 39 (p. 68) I have assigned 9% impairment of the lower extremity for knee flexion of 126 degrees and 0% impairment of the lower extremity for knee extension of 0 degrees. This adds to a total of 9% lower extremity impairment for knee ROM.
The 15% lower extremity impairment for the ACL and meniscus, and 9% lower extremity impairment for knee ROM are combined using the Combined Values Table (p. 254) to equal 23% lower extremity impairment.
23% lower extremity is converted to 9% whole person impairment using Table 46 (p. 72).

Apportionment: No apportionment is necessary as there is no documentation of previous injury to the left knee.

Function: Patient is able to ascend and descend steps, perform a light jog for one mile, but he is not able to return to playing in his soccer league.

Return to Work:
Mr. Chris has returned to work at full duty without permanent work restrictions.

Maintenance Care:
No maintenance care is required.

Dr. Patrick Star, MD, MPH
Level II Accredited, Colorado Division of Workers' Compensation

Doctors Plus Family Health Clinic
2513 S. Scissor St
Denver, CO 56897

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COLORADO
Department of
Labor and Employment

Division of Workers' Compensation
633 17th Street, Suite 400
Denver, CO 80202-3660

Impairment Rating Report Checklist

- Provide the **history** of the injury
- Summarize the **treatment** for the injury
- Document the **physical examination** for each area related to the work injury
- Provide a clinical **diagnosis**
- Provide **date of MMI** and **discussion** of why the patient has reached MMI
- **Describe the impairment rating**; include Tables, Figures and page numbers from the AMA Guides
- **Describe** the patient's functional status
- Apply **apportionment,** if applicable
    - Describe previous injury
    - Provide previous injury rating if available
    - Determine if previous injury is work-related
        - If not work-related, determine if it was independently disabling
- Complete all **worksheets** and include them in report
    - e.g., WC-164, Spine summary sheet, LE, UE worksheets, DIME summary sheet, if applicable
- Describe any **maintenance** treatment and future **work restrictions**

Tips:

- Use headings and paragraphs for each section above to help organize the report for all legally involved parties.
- Contact the Provider Education Unit if you have questions while completing impairment ratings: cdle_dowc_provider_education@state.co.us or (303) 318-8754

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Nervous System Impairment Ratings

The Brain, Spinal Cord, Cranial Nerves, and Peripheral Spinal Nerves
AMA Guides, 3rd Edition, revised - Chapter 4, (p. 103)

Objectives:

1) Utilize the subcategory rating charts for calculating a brain or spinal cord impairment rating.
2) Identify when the brain and/or spinal cord impairment ratings should be combined versus using the highest rating for the final impairment rating.
3) Utilize the cranial nerve chart for determining a cranial nerve impairment rating.
4) Identify the steps for rating a peripheral nerve and using the combined values chart and conversion tables to calculate a final peripheral nerve impairment rating.

Summary/Steps for Determining Brain Impairment Ratings

1. Evaluate ADLs including the six rating categories found on pages 104-106 of the *AMA Guides*.
2. Refer to *AMA Guides* Table 1 (Column B.- Brain, p. 109) to grade the severity of the disorder.
3. The disorder may be rated in more than one category; therefore, indicate the percentage of impairment for each category.
4. Choose only the **highest** impairment rating from the categories identified in Step 3 to determine the whole person impairment rating on *AMA Guides* Table 1, p.109. Do not combine or add categories within column B.
5. Impairment of the brain is *combined* with other whole person impairment ratings for the final rating.

Summary/Steps for Determining Spinal Cord Impairment Ratings

1. Evaluate ADLs including the six rating categories found on pages 106-108 of the *AMA Guides*.
2. Refer to *AMA Guides* Table 1, (Column A.- Spinal Cord and/or Brain, p. 109) to grade the severity of the disorder. Column A is predominantly used for Spinal Cord ratings.
3. Impairment values from multiple categories in column A are **combined** to calculate the final whole person impairment rating using the Combined Values Chart (p. 254) of the *AMA Guides*.
4. Impairment of the Spinal Cord is *combined* with other whole person ratings for the final rating.

Summary/Steps for Determining Cranial Nerve Impairment Ratings

1. Refer to the *AMA Guides*, pages 108-111 for rating cranial nerves.

Summary/Steps for Determining Peripheral Spinal Nerve Ratings

1. Identify the total motor and sensory value of the nerve.
    - Refer to the Nerve Reference Chart to locate the appropriate tables within the *AMA Guides*. Identify the nerve in the correct table and determine the total value of the nerve (sensory values located in the first column and motor values in the second column.)
    - Record maximum sensory and motor values for the affected nerve from the above table on the appropriate worksheet.
2. Determine the grade of the sensory and motor loss for each nerve using the corresponding grading table.
    - To grade *sensory* deficit, use physical examination findings and expected functional deficits.
        - *AMA Guides* Table 10, p. 42 is used to grade upper and lower extremity
        - *AMA Guides* Table 3, p. 112 is used to grade the head and neck, inguinal region and perineum
    - To grade *motor* deficit, use muscle strength testing on a 5/5 scale.
        - *AMA Guides* Table 11, p. 42 is used to grade upper and lower extremity
        - *AMA Guides* Table 4, p. 113 is used to grade the head and neck, inguinal region and perineum
3. Use the sensory value determined from Step 1 (total maximum sensory) and multiply by the value determined in Step 2 (sensory grade) to determine the sensory nerve impairment rating.
    a. (total maximum sensory nerve value) **X** (sensory grade value) = sensory nerve impairment rating
4. Use the motor value determined from Step 1 (total maximum motor) and multiply by the value determined in Step 2 (motor grade) to determine the motor nerve impairment rating.
    a. (total maximum motor nerve value) **X** (motor grade value) = motor nerve impairment rating
5. The sensory and motor nerve impairments are **combined** using the Combined Values Chart (*AMA Guides* p. 254) to determine the overall nerve impairment rating.
6. Record the nerve impairment value on the appropriate worksheet. **Combine** the nerve impairment with only "like" units when determining the impairment rating. (i.e. Right UE nerve impairment and right UE ROM impairment, left UE nerve impairment with left ROM impairment)
7. **Convert** the upper extremity units to whole person using *AMA Guides* Table 3, p. 16 and then **combine** this value with other whole person impairments for the final whole person rating.
    - For example, *whole person* spine rating cannot be combined with right *lower extremity* sensory nerve rating until the lower extremity rating is converted to whole person first.

References/Links
No worksheets needed for rating the brain, spinal cord or cranial nerves
Utilize the Extremity or Spine Worksheets for peripheral nerve injuries
Division's Impairment Rating Tips (Desk Aid 11)

Core Content: Ratings are primarily based on the evaluation of activities of daily living, which include self-care and personal hygiene, communication, normal living postures (sitting, standing, lying down), ambulation, travel, non-specialized hand activities (grasping, lifting, tactile discrimination), sexual function, sleep and social and recreational activities.

Brain Impairment General Principles: In a workers' compensation case, a complete physical examination of the brain includes these essential elements:

- Sensory and motor disturbances
- Language disturbances
- Emotional disturbances
- Consciousness disorders
- Episodic neurological disorders
- Sleep and arousal disorders

The Brain
Many of the activities described in the brain section overlap with activities that could be rated in other areas such as the mental and behavioral disorders section. Ratings for a specific category or dysfunction must be limited to only one section of the *AMA Guides* to avoid "double dipping."

For example, if a neurological deficit causes difficulty with communication, it should only be rated in the central nervous system section and not receive an additional rating in the psychiatric section. If there are problems that are not related to physiological brain damage, but to overlying psychological effects of the injury, a psychiatric rating should be given.

Impairment Rating of the Brain Using *AMA Guides* Table 1, p. 109 - Column B

1. Language Disturbances
2. Complex Integrated Cerebral Function Disturbances
3. Emotional Disturbances
4. Consciousness Disorders
5. Episodic Neurological Disorders
6. Sleep and Arousal Disorders

Even though the patient may fall into several categories, the patient only receives the highest rating that has been assigned in any of the categories. For example, if the patient receives a 10% rating for language disturbances and 15% rating for episodic neurological disorders, the overall rating would be 15% for episodic neurological disorders, since it is the highest rating.

Grading of the severity of the 6 above categories should be correlated with appropriate objective testing. The grading categories for the disturbance of daily activities are:

- Mild
- Moderate
- Supervision required
- Unable to care for themselves

1. Language Disturbances: Rating in this area is given only when there is a problem with the central mechanism for language comprehension, storage, and production. When speech is affected by mechanical pathology, the rating is performed under Chapter 9 (ENT) of the *AMA Guides*.

Language Disturbances Rating (*AMA Guides* p. 104-105)

% Impairment	Description
0-15 %	Minimal disturbance in comprehension and production of language symbols of daily living
20-45%	Moderate impairment in comprehension and production of language symbols for daily living
50-90%	Cannot comprehend language symbols, therefore has an unintelligible or inappropriate production of language for daily living
95%	Cannot comprehend or produce language symbols sufficient for daily living

2. Disturbances of Complex Integrated Cerebral Functions: These areas are related to organic brain dysfunction and include:

- Memory disturbances
- Difficulty understanding concepts or abstracting
- Thought organization
- Multi-tasking
- Orientation deficits
- Unacceptable social behavior
- Inability to initiate decisions

Disturbances of Complex Integrated Cerebral Functions Rating (*AMA Guides* p. 105)

% Impairment	Description
5-15%	Degree of impairment of complex integrated cerebral functions but there is ability to carry out most activities of daily living as well as before onset
20-45%	Degree of impairment of complex integrated cerebral functions such that daily activities need some supervision and/or direction
50-90%	Degree of impairment of complex integrated cerebral functions that limit daily activities to directed care under confinement at home or other domicile
95%	A severe degree of impairment of complex integrated cerebral functions that the individual is unable to care for self in any situation or manner

3. Emotional Disturbances: When emotional disturbances are rated in this section, they must be due to physiological brain damage. Examples of emotional disturbances include:

- Outbursts of severe rage
- Irritability/agitation
- Anhedonia
- Lack of normal emotional responses

Avoid overlap with mental/behavioral disorders when rating in this section. Emotional disturbances related to a mental disorder should not be rated under Table 1, p. 109. Refer to the mental health section for rating.

Emotional Disturbances Rating (*AMA Guides* p. 105)

% Impairment	Description
5-15%	Mild to moderate emotional disturbance under unusual stress
20-45%	Mild to moderate emotional disturbance under ordinary stress
50-90%	Moderate to severe emotional disturbance under ordinary to minimal stress, which requires sheltering
95%	Severe emotional disturbance which continually endangers self or others

4. Consciousness Disturbances: This section is used to rate disturbances of consciousness that are not rated under other central nervous system sections. Examples of consciousness disturbances include:

- Hyperactive states
- Stupor
- Coma

Consciousness Disturbances Rating (*AMA Guides* p. 105)

% Impairment	Description
5-35%	Neurological disorder results in mild alteration in state of consciousness
40-70%	Neurological disorder results in moderate alteration in state of consciousness
75-90%	Neurological disorder results in state of stupor
95%	Neurological disorder results in state of coma

5. Episodic Neurological Disorders: Disorders in this section include:

- Syncope
- Seizures
- Headaches related to brain injury

Episodic Neurological Disorders Rating (*AMA Guides* p. 106)

% Impairment	Description
5-15%	Disorder of slight severity which is under control such that most activities of daily living can be performed
20-45%	Disorder of severity sufficient to interfere moderately with activities of daily function
50-90%	Severe and constant disorder which limits activities to supervised, protected care or confinement
95%	Severe and constant disorder which totally incapacitates the individual in terms of daily living

6. Sleep and Arousal Disorders: Disorders that reduce daytime attention and concentration should be the primary impairments rated in this section.

This category can significantly overlap with other diagnoses. For example, congestive heart failure, arrhythmias, and cardiac failures may cause some arousal disorders. However; the functional impairment rated in this section should not overlap with functional impairment rated on the primary diagnosis section.

Sleep disorders due to depression are usually rated sufficiently under the mental and behavioral disorder section and not in this section.

Sleep and Arousal Disorders Rating (*AMA Guides* p. 106)

% Impairment	Description
5-15%	Reduced daytime alertness due to sleepiness or sleep episodes, or disturbed nocturnal sleep affecting complex integrated cerebral functions but ability remains to carry out most activities of daily living (ADLs)
20-45%	Reduced daytime alertness, requires some supervision to carry out ADLs
50-90%	Reduced daytime alertness or other sleep disturbances significantly limits ADLs and requires supervision by caretakers
95%	Severe reduction of daytime alertness such that ADLs are severely limited, causing the patient to be unable to care for self in any situation or manner

Additional Information for Rating Headaches from the Divisions' Impairment Rating Tips

- Headaches which qualify for a separate work-related impairment rating should be rated using the Episodic Neurological Disorders section in Table 1, p.109. If the individual has a closed head injury, the highest applicable rating from this table is the only rating used. If the headache rating is to be combined with another body part, the rater must be very careful not to rate the ADL deficits in both impairment areas.

Spinal Cord Impairment General Principles: In a workers' compensation case, a complete physical examination includes these essential elements:

- Station and gait
- Use of upper extremities
- Respiration
- Urinary bladder function
- Anorectal function
- Sexual function
- Sensory disturbances (pain, temperature, vibration, positional senses, autonomic disorders including sweating, circulation and temperature regulation)

Spinal Cord

Sensory disturbances including pain, temperature, vibration, or positional senses, and autonomic disorders including sweating, circulation and temperature regulation may be rated under spinal cord disorders. Impairment rating of the spinal cord is divided into 6 categories (*AMA Guides* Table 1, p. 109, Column A):

1. Station and gait
2. Use of upper extremities
3. Respiration
4. Urinary bladder function
5. Anorectal function
6. Sexual function

All of the rating areas for each category are combined for the final impairment rating. For example, if the patient receives a 10% rating for station and gait and 15% rating for use of upper extremities, the overall rating would be 24% since the ratings are *combined* for the final impairment rating.

1. Station and Gait

Station and Gait Rating (*AMA Guides* p. 107)

% Impairment	Description
5-20%	Ability to rise to a standing position and walk, but difficulty with elevations, grades, steps, and distances
25-35%	Ability to rise to a standing position and walk with difficulty, but limited to level surfaces and variability as to the distance the patient can walk
40-60%	Ability to rise to a standing position and maintain it with difficulty, but inability to walk
65%	Can stand only with a prosthesis or help of others

2. Use of Upper Extremities: This is the only section in the *AMA Guides* that differentiates between dominant and nondominant upper extremities. This section rates for the preferred, non-preferred upper extremity and bilateral extremities.

- Note that the extremity preference may change with time and should be re-evaluated as necessary.

Use of Upper Extremities Rating (*AMA Guides* p.107)

Description	**Preferred Extremity % Impairment**	**Non-preferred Extremity % Impairment**	**Bilateral Extremity % Impairment**
Use of extremity for self care, grasping and holding, but difficulty with digital dexterity	5-10%	0-5%	5-15%
Can use the involved extremity for self care, but grasp and hold objects with difficulty and no digital dexterity	15-25%	10-15%	20-40%
Description	**Preferred Extremity % Impairment**	**Non-preferred Extremity % Impairment**	**Bilateral Extremity % Impairment**
Use of involved extremity, but difficulty with self care activities	30-35%	20-25%	45-80%
Cannot use the involved extremity for self care or cannot use upper extremities	40-60%	30-40%	85%

3. Respiration: Rating is limited to the individual's ability to perform the act of breathing

Respiration Rating (*AMA Guides* pp. 107-108)

% Impairment	Description
5-20%	Capable of spontaneous respiration, but difficulty in ADLs that require extra exertion
25-50%	Spontaneous respiration, but of a degree that restricts patient to sitting, standing or limited ambulation
75-90%	Spontaneous respiration, but of a degree that limits the patient to bed existence
95%	No capacity for spontaneous respiration

4. Urinary Bladder Function: Refers only to spinal cord disorders resulting in difficulties emptying the bladder.
The rating should not overlap with Chapter 11 (Urinary and Reproductive Systems) and should be correlated with urodynamic testing when possible.

Urinary Bladder Function Rating (*AMA Guides* p. 108)

% Impairment	Description
5-10%	Varying degree of voluntary bladder control but is impaired by urgency
15-20%	Good bladder reflex activity but no voluntary control (limited capacity with intermittent emptying times)
25-35%	Poor reflex activities (intermittent dribbling) and no voluntary control
40-60%	No reflex or voluntary control of the bladder (continuous dribbling)

5. Anorectal Function: Refers to the ability to control anorectal emptying.
The rating should not overlap with *AMA Guides* Chapter 10 (Digestive System) but should be correlated with functional bowel testing when possible.

Anorectal Function Rating (*AMA Guides* p. 108)

% Impairment	Description
0-5%	Reflex regulation but only limited voluntary control
10-15%	Reflex regulation but no voluntary control
20-25%	No reflex regulation and no voluntary control

6. Sexual Function: Rating in this area is only used for sexual difficulties caused by a spinal cord injury and not for problems due to other reproductive neurological or psychiatric disorders.

- If the patient is below 40 years old, the values may be increased by 50% (i.e. 25-year-old patient with 10% sexual function, the rating would be increased to 15%)
- If the patient is over 64 years old, the percentage impairment may be decreased by 50%.

Sexual Function Rating (*AMA Guides* p. 108)

% Impairment	Description
5-10%	Sexual function present, but with varying degree of difficulty of erection or ejaculation in males or awareness in both sexes
10-15%	Reflex sexual function possible, but there is no awareness
20%	No sexual function

Pitfalls:

Sensory and Motor Disturbances *AMA Guides* Table 1, p. 109 - Column A: It is rare that a patient would receive a rating only for brain sensory and motor disturbance. Evaluation is based on their ultimate effects on ADLs. The physician should determine whether the disturbance is unilateral, bilateral or which preferred side is affected.

An example of a *sensory impairment* that requires a sensory disturbance rating is phantom limb sensation. If rating a sensory disturbance, the following factors should be taken into account:

- Pain and dysesthesias of central origin
- Disorders in the recognition of the size, shape, and form of objects (astereognosis)
- Disturbance of two-point and position sense
- Paresthesias of central origin
- Other central disturbances that might be identified with more complex testing

Examples of *motor disorders* that may receive a rating would include:

- Hemiparesis
- Involuntary tremors
- Disturbances of tone and posture
- Bradykinesia and cerebellar or frontal origin dysfunctions

Cranial Nerves

The following table outlines cranial nerve impairment per the ***AMA Guides*** **(pp. 108-111):**

Cranial Nerve	**Description**	**% Impairment (whole person)**
I: Olfactory (sensory only)	Smell	Bilateral involvement: complete loss of smell (anosmia) = 3% Unilateral involvement: No rating *Note:* Noxious smells (ammonia, isopropyl alcohol) are mediated by Trigeminal Nerve (V)
II. Optic (sensory only)	Vision	One eye loss of vision = 24% Total (bilateral) blindness = 85% Partial losses rated under Chapter 8 (Visual System)
III. Oculomotor (motor only) IV. Trochlear (motor only) VI. Abducens (motor only)	III. Upward, downward, medial gaze IV. Depression and intorsion VI. Lateral Gaze	Permanent diplopia = loss of vision in one eye = 24% If diplopia requires compensatory head tilt: an additional rating can be used for Station and Gait (Chapter 8) if a partial visual impairment is present. *Combine* this rating with diplopia rating
V. Trigeminal (sensory)	Facial sensation (V1-3), noxious smells	Unilateral loss of sensation = 3-10% Bilateral loss of sensation = 20-35% Tic douloureux (Trigeminal Neuralgia) = 10-50%

V. Trigeminal (motor)	Somatic, muscles of mastication	Complete unilateral paralysis = 3-5% Complete bilateral paralysis = 30-45% Speech and swallowing disorders: **see Chapter 9 (ENT)**
Cranial Nerve	**Description**	**% Impairment (whole person)**
VII. Facial (sensory and motor)	*Sensory*: taste *Motor*: facial expression	*Sensory:* complete unilateral loss of taste (rare) = 3% *Motor*: Complete unilateral paralysis:= 10-15% Complete bilateral paralysis = 30-45% Other motor losses are based on speech and eating difficulties - **Refer to Chapter 9 (ENT)**
VIII. Auditory (sensory only)	Hearing and equilibrium See Chapter 9 (ENT) for procedure to evaluate hearing loss and vestibular impairment	Complete hearing loss: Unilateral = 6% Bilateral = 35% Vestibular: Unilateral = 0% Bilateral = 0-25%
VIII. Auditory **(tinnitus)***	Hearing loss must be documented to rate tinnitus (*AMA Guides* p. 110)	3-5% **added** to hearing impairment for tinnitus
IX. Glossopharyngeal X. Vagus XI. Cranial Accessory XII. Hypoglossal	Refer to Chapter 9 (ENT) for speech and swallowing disorders, or diet restrictions	Diet restrictions also found in neurological section

Additional Information for Tinnitus Impairment from the Divisions' Impairment Rating Tips

*__Tinnitus__: Can only be rated when a hearing impairment is documented. The hearing impairment need not be from the current injury. If adding impairment for tinnitus, the 3-5% would be added to the binaural hearing impairment percentage.

Peripheral Spinal Nerves: The total value of the nerve indicated on the Nerve Reference Chart represents a fully severed nerve (sensory nerve deficit values in the first column and motor nerve deficit values in the second column.) Since most nerve injuries do not involve a fully severed nerve, the evaluator must grade the nerve, which determines the severity of impairment. This graded value is then multiplied by the maximum value of the nerve from the peripheral spinal nerve chart to determine the overall nerve impairment rating.

- Sensory nerve impairment is determined by the decrease in sensation (2 point discrimination), the presence of pain and the effect on activity performance.
- Motor nerve impairment is determined by gross resistance testing.

Peripheral Spinal Nerves:

1. Refer to the Nerve Reference Chart to locate the appropriate tables within the *AMA Guides*. Identify the nerve in the correct table and determine the total value of the nerve (sensory values located in the first column and motor values in the second column.)
2. Determine the grade of the sensory and motor loss for each nerve using the corresponding grading table identified on the Nerve Reference Chart below.
    - To grade *sensory* deficit, use physical examination findings and associated functional deficits.
        - *AMA Guides* Table 10, p. 42, Chapter 3 is used to grade upper and lower extremity
        - *AMA Guides* Table 3, p. 112, Chapter 4 is used to grade the head and neck, inguinal region and perineum
    - To grade *motor* deficit, use muscle strength testing on a 5/5 scale.
        - *AMA Guides* Table 11, p. 42, Chapter 3 is used to grade upper and lower extremity
        - *AMA Guides* Table 4, p. 113, Chapter 4 is used to grade the head and neck, inguinal region and perineum
3. Use the sensory value determined from Step 1 (total maximum sensory) and multiply by the value determined in Step 2 (sensory grade) to determine the sensory nerve impairment rating.
    - (total maximum sensory nerve value) **X** (sensory grade value) = sensory nerve impairment rating
4. Use the motor value determined from Step 1 (total maximum motor) and multiply by the value determined in Step 2 (motor grade) to determine the motor nerve impairment rating.

- (total maximum motor nerve value) **X** (motor grade value) = motor nerve impairment rating

5. The sensory and motor nerve impairments of the same nerve are **<u>combined</u>** using the Combined Values Chart (*AMA Guides* p. 254) to determine the overall nerve impairment rating.
6. Record the nerve impairment value on the appropriate worksheet. **Combine** the nerve impairment with only "like" units when determining the impairment rating. (i.e. Right UE nerve impairment and right UE ROM impairment, left UE nerve impairment with left ROM impairment)
7. **Convert** the upper extremity units to whole person using *AMA Guides* Table 3, p.16 and then **combine** this value with other whole person impairments for the final whole person rating.
    - For example, *whole person* spine rating <u>cannot</u> be combined with right *lower extremity* sensory nerve rating until the lower extremity rating is converted to whole person first.

Nerve Reference Chart: Pay close attention to the type of rating (extremity or whole person) as this is important when combining with other values or converting the overall rating to whole person. Use the grading tables column on this chart to identify the location of the sensory and motor grading tables that correspond with the specific nerve. The reference column assists in locating the specific nerve for rating.

The *extremity ratings* are highlighted below and must always be converted to whole person. The tables, figures and page numbers are from the *AMA Guides*.

Nerves Rated	Nerve Table #, page #	Units	Grading Tables S=Sensory, M=Motor	Reference for Locating Nerves
Unilateral spinal nerves - head and neck, greater occipital, lesser occipital, great auricular, spinal accessory	5, p. 113	Whole person	**S =** Table 3, p. 112 **M =** Table 4, p. 113	
Unilateral spinal nerves-inguinal and perineum, iliohypogastric, ilioinguinal, pudendal, coccygeal	7, p. 114	Whole person	**S =** Table 3, p. 112 **M =** Table 4, p. 113	Figure 78, p. 75
Thoracic Nerves	6, p. 114	Whole person	**S =** Table 3, p. 112 **M =** Table 4, p. 113	
Unilateral spinal nerve roots upper extremity **C5-T1**	12, p. 43	Upper extremity	**S =** Table 10, p. 42 **M =** Table 11, p. 42	Figure 45, p. 39 Table 9, p. 40 Figure 47, p. 45

Unilateral brachial plexus upper, middle and lower trunks	13, p. 44	Upper extremity and whole person	**S =** Table 10, p. 42 **M =** Table 11, p. 42	Figure 46, p. 44
Nerves Rated	**Nerve Table #, page #**	**Units**	**Grading Tables S=Sensory, M=Motor**	**Reference for Locating Nerves**
Specific **upper extremity peripheral nerves** (median, ulnar, radial, etc.)	14, p. 46	Upper extremity and digit	**S =** Table 10, p. 42 **M =** Table 11, p. 42	Figure 45, p. 39 Table 9, p. 40 Figure 47, p. 45
Unilateral spinal nerve roots lower extremity **L3-S1**	49, p. 76	Lower extremity	**S =** Table 10, p. 42 **M =** Table 11, p. 42	Figure 77, p. 73 Table 48, p. 74 Figure 79, p. 75
Unilateral lumbosacral plexus	50, p. 76	Whole person	**S =** Table 10, p. 42 **M =** Table 11, p. 42	Figure 78, p. 75
Specific **lower extremity peripheral nerves** (femoral, peroneal, tibial, etc.)	51, p. 77	Lower extremity	**S =** Table 10, p. 42 **M =** Table 11, p. 42	Figure 77, p. 73 Table 48, p. 74 Figure 79, p. 75

AMA Guides Table 15, p. 46 is not used since the categories of impairment (mild, moderate and severe) are not defined and Table 14 is more specific.

The total value of the nerve is multiplied by the grade of the nerve for the overall nerve impairment rating. *AMA Guides* Tables 10 and 11 are the most frequently used tables to grade the nerve and calculating the overall nerve impairment. It is recommended to tab these tables on page 42 in the *AMA Guides* for efficient reference.

Sensory Nerve Grading: Table 10 (*AMA Guides* p. 42)

Grade (%)	Description
0	No loss of sensation or spontaneous abnormal sensation
1-25	Decreased sensation with or without pain which is forgotten during activity
26-60	Decreased sensation with or without pain which interferes with activity
61-80	Decreased sensation with or without pain which may prevent activities (minor causalgia)
81-95	Decreased sensation with severe pain which may cause outcries as well as prevent activity (major causalgia)
96-100	Decreased sensation with pain, which may prevent all activity

Motor Nerve Grading: Table 11 (*AMA Guides* p. 42)

Grade (%)	Description
0	Complete range of motion against gravity and full resistance
1-25	Complete range of motion against gravity and some resistance, or reduced fine movements in motor control
26-50	Complete range of motion against gravity and only without resistance
51-75	Complete range of motion with gravity eliminated
76-99	Slight contractibility, but no joint motion
100	No contractibility

Additional Information for Peripheral Nerve Injuries Resulting from Cumulative Trauma Impairment Ratings from the Divisions' Impairment Rating Tips

- All peripheral nerve injuries should be rated under the peripheral nerve tables and multiplied by the grading scheme as above.
- ROM or the Cumulative Trauma Disorders rating system should only be used if there is a separate and distinct non-neurologic cumulative trauma diagnosis (i.e. De Quervain's Tenosynovitis), or ROM impairment.

Pitfalls
Range of motion deficits cannot be combined with motor deficits of the nerve if ROM is *secondary* to motor nerve damage. This would be considered **"double dipping"** and the impairment for the motor deficit accounts for the ROM deficit.

Digital nerves are rated using a different system and will be discussed in the Upper Extremity Section.

Exclusions/Omissions in the *AMA Guides*:
It is recommended that Table 15 (*AMA Guides* p. 46) "Impairment of Upper Extremity Due to Entrapment Neuropathy" be crossed out. It should not be used because the *AMA Guides* do not provide definitions for mild, moderate and severe impairment and *AMA Guides* Table 14 is more specific.

Case Example: A patient has a unilateral C5 nerve root sensory impairment, decreased sensation with pain, which is forgotten during activity. She also has C5 motor nerve involvement with decreased (4 /5) biceps, brachioradialis and deltoid strength.

Calculate the sensory impairment, motor impairment, and overall C5 nerve impairment and then convert to a whole person rating.

Answer:

1. Identify the nerve from the Nerve Reference Chart and determine the total value of the nerve.
    - Sensory nerve, Unilateral Spinal Nerve Root C5 (*AMA Guides* Table 12, p. 43 - 1st column) = **5%**
    - Motor nerve, Unilateral Spinal Nerve Root C5 (*AMA Guides* Table 12, p. 43 - Column 2) = **30%**
2. Identify the graded value of the *sensory* nerve by referencing *AMA Guides* Table 10, p. 42.
    - Decreased sensation with or without pain which is forgotten during activity = **20%** is chosen.
3. Identify the graded value of the motor nerve by referencing *AMA Guides* Table 11, p. 42.
    - Complete range of motion against gravity and some resistance, or reduced fine movements and motor control = **20%** is chosen
4. Multiply the *sensory nerve* loss by the graded value of *sensory nerve* for the total sensory nerve impairment rating.
    - Total sensory nerve impairment rating: **5% x 20% = 1%**
5. Multiply the *motor nerve* loss by the graded value of *motor nerve* for the total motor nerve impairment rating.
    - Total motor nerve impairment rating: **30% x 20% = 6%**
6. **Combine** (using the Combined Values Chart *AMA Guides* p. 254) the sensory and motor nerve impairment rating values for a <u>final nerve impairment rating.</u>
    - Sensory impairment **(1%)** *combined* with motor impairment **(6%) = 7% upper extremity nerve impairment.**
    - Impairment value is documented on the corresponding worksheet and combined with other impairments for final whole person rating.
7. **Convert** the upper extremity units to whole person using *AMA Guides* Table 3 (p. 16).
8. **Combine** this value with other whole person impairments for the final whole person rating.
    - In this case, if no other impairments were found, the 7% upper extremity nerve impairment would be **converted** to whole person using *AMA Guides* Table 3 (p. 16) = **4%**

Case Example:
57-year-old female employee spends a minimum of 4 hours per day working on the assembly line in a poultry processing plant and develops carpal tunnel syndrome. Her EMG demonstrated median nerve changes and conservative measures did not improve her condition.

After a carpal tunnel release and upon reaching MMI, the patient improved but continued to have a median nerve motor deficit, which allowed complete ROM against some resistance and resulted in a reduction in fine movements.
She also experienced decreased sensation and pain in the median nerve distribution, distal to the wrist. This limits her activity on the most intensive assembly line to 2 hours.

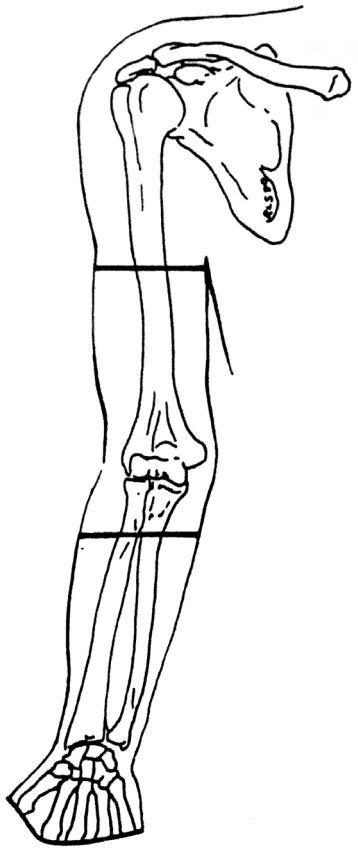
Calculate her impairment rating:

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** _____ [1]				**IMP% =** _____ [2]		**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand _____% + Wrist _____% + Elbow _____% + Shoulder _____%)	=
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=

Total Upper Extremity Impairment (Combine I + II + III + IV + V)	=
Impairment of Whole Person (Use Table 3)	=

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Answer:

1. Identify the nerve from the Nerve Reference Chart and determine the total value of the nerve.
   - Sensory Nerve, Median nerve below the mid-forearm: *AMA Guides* Table 14, p. 46 - Column 1 = **40%**
   - Motor Nerve, Median nerve below the mid-forearm: *AMA Guides* Table 14, p. 46 - Column 2 = **35%**
2. Identify the grade of the *sensory nerve* using *AMA Guides* Table 10, p. 42.
   - Grade 3 (26-60%): decreased sensation with or without pain which interferes with activity = **50%** is chosen
3. Identify the grade of the motor nerve using *AMA Guides* Table 11, p. 42
   - Grade 2 (1-25%): complete range of motion against gravity and some resistance, or reduced fine movements in motor control = **25%** is chosen
4. Multiply the total *sensory value* for the median nerve by the graded value of the *sensory* nerve.
   - *Sensory nerve*: 40% x 50% = **20%**
5. Multiply the total *motor value* for the median nerve by the value of the graded nerve:
   - *Motor nerve*: 35% x 25% = **9%**
6. **Combine** the sensory and motor impairments for the final peripheral nervous system impairment rating by using the Combined Values Chart (*AMA Guides* p. 254)
   - 20% (sensory) **combined** with 9%(motor) = **27% upper extremity impairment**
   - Impairment value is documented on the corresponding worksheet and combined with other impairments for final whole person rating.
7. **Convert** the combined sensory and motor nerve upper extremity impairment rating to whole person using *AMA Guides* Table 3 (p. 16)
   - 27% upper extremity nerve rating converts to **16% whole person rating**
8. **Combine** this value with other whole person impairments for the final whole person rating.
   - In this case, no other impairments were found so the final impairment rating is **16% whole person.**

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name **Case Example Answer** Age ____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date ____

Occupation ____ Diagnosis ____

Abnormal Motion	**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %	List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %

Wrist

	Flexion	Extension	ANK	IMP%
Angle°				
IMP%				

	RD	UD	ANK	IMP%
Angle°				
IMP%				

Add IMP% F/E + RD/UD = ____ [1] **IMP% =** ____ [2]

Elbow

	Flexion	Extension	ANK	IMP%
Angle°				
IMP%				

	PRO	SUP	ANK	IMP%
Angle°				
IMP%				

Add IMP% F/E + PRO/SUP = ____ [1] **IMP% =** ____ [2]

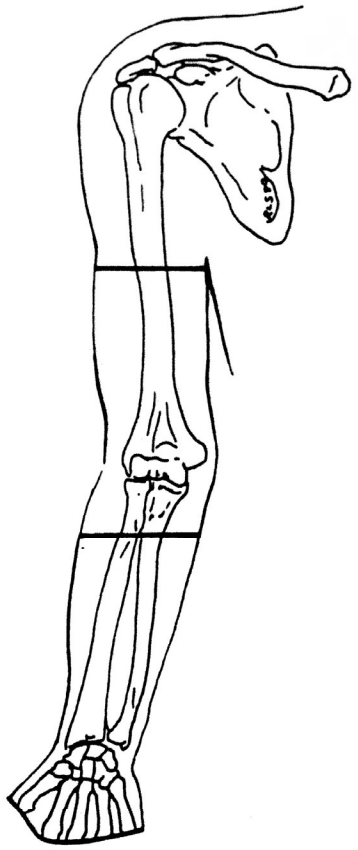
Shoulder

	Flexion	Extension	ANK	IMP%
Angle°				
IMP%				

	ADD	ABD	ANK	IMP%
Angle°				
IMP%				

	INT ROT	EXT ROT	ANK	IMP%
Angle°				
IMP%				

Add IMP% F/E + ADD/ABD + IR/ER = ____ [1] **IMP% =** ____ [2]



IMP%

I. Amputation Impairment (Other than Digits)		=
II. Regional Impairment of Upper Extremity (Combine Hand ____% + Wrist ____% + Elbow ____% + Shoulder ____%)		=
III. Peripheral Nervous System Impairment	**S: 40 x 50 = 20%** **M: 35 x 25= 9%** **Combine 20% + 9%**	= **27%**
IV. Peripheral Vascular System Impairment		=
V. Other Disorders (Not Included in Regional Impairment)		=
Total Upper Extremity Impairment (Combine I + II + III + IV + V)		= **27%**
Impairment of Whole Person (Use Table 3)		= **16%**

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

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Complex Regional Pain Syndrome Impairment Ratings

Complex Regional Pain Syndrome (CRPS)
AMA Guides, 3rd Edition, revised - Chapter 4, (p. 103)

Objectives:

1) Identify the Division's recommendations for evaluating impairment due to CRPS.
2) Recognize the importance of evaluating the activities of daily living in order to assign an appropriate rating for CRPS.
3) Apply the steps necessary to rate complex regional pain syndrome.

Summary/Steps for Determining Complex Regional Pain Syndrome (CRPS) Impairment

1. Impairment is rated based on the Type of CRPS:
    - Type I (CRPS): If upper extremity function or station and gait are affected, rate by using Spinal Cord/Brain, Table 1 - Column A (*AMA Guides* p.109)
        - ROM should not be used, as this would be accounted for in the neurologic portion of the rating from *AMA Guides* Table 1, p. 109
    - Type II (Causalgia): Rate using the appropriate nerve rating system.
        - ROM should not be used, as this would be accounted for in the neurologic portion of the rating.
            - When using *AMA Guides* Table 10, p. 42 for grading the nerve involved, category 4 and above include causalgia in the grading scheme.
        - If the evaluator believes the Spinal Cord/Brain, Table 1-Column A (*AMA Guides* p. 109) better represents the impairment, this may be used.

References/Links

No worksheets needed for rating the Spinal Cord and/or Brain (Table 1 - Column A, *AMA Guides* p. 109)
Utilize the Extremity Worksheets for peripheral nerve rating system
Division's Impairment Rating Tips (Desk Aid 11)

Core Content: Ratings are primarily based on the evaluation of activities of daily living, which include self-care and personal hygiene, communication, normal living postures, (sitting, standing, lying down) ambulation, travel, non-specialized hand activities, (grasping, lifting, tactile discrimination) sexual function, sleep and social and recreational activities.

Complex Regional Pain Syndrome (CRPS)

There are different types of CRPS recognized by the Medical Treatment Guidelines:

- Type I (CRPS) has no demonstrable nerve injury. However, if upper extremity function or station and gait are affected, rate by using the Spinal Cord/Brain,

Table 1 - Column A (*AMA Guides* p. 109). ROM should not be used, as this would be accounted for in the neurologic portion of the rating.

- Type II (Causalgia) has a documented specific nerve injury with sensory and/or motor deficits. Rate by using the appropriate named peripheral nerve table. ROM should not be used, as this would be accounted for in the neurologic portion of the rating.
    - In certain cases, the area affected may not correspond to specific named peripheral nerve. The rating physician may choose to utilize one of the following:
        - Table 50, p. 76 (Unilateral Lumbosacral Plexus Impairment),
        - Table 13, p. 44 (Unilateral Brachial Plexus Impairment),
        - Table 49, p. 76 (Unilateral Spinal Nerve Root Impairment Affecting the Lower Extremity), or
        - Table 12, p. 43 (Unilateral Spinal Nerve Root Impairment Affecting the Upper Extremity).
    - Ratings for specific nerves, plexuses, or spinal nerve roots are then modified by *AMA Guides* Table 10 (sensory nerve grade) and/or Table 11 (motor nerve grade) on page 42 to calculate the extremity impairment.
        - If both sensory and motor impairments are graded, the resulting impairment values are **combined** to calculate a total extremity impairment.
        - **Convert** the extremity impairment to whole person. (*AMA Guides* Table 46, p. 72 for lower extremity or Table 2, p. 16 for upper extremity.)
    - Alternatively, the Spinal Cord/Brain, Table 1- Column A (*AMA Guides* p. 109) may be used to rate the impairment if deemed more appropriate by the physician and justified in the narrative report.

Additional Information for Complex Regional Pain Syndrome Impairment Ratings from the Divisions' Impairment Rating Tips (p. 2)

- The Division recommends using Spinal Cord/Brain, Table 1- Column A (*AMA Guides* p. 109) for determining impairment; however, the peripheral nerve tables may be used if the evaluator deems them more appropriate. In unusual cases where severe vascular symptoms cause additional impairment of ADLs, the physician may choose to combine additional impairment for the vascular tables (*AMA Guides* Table 52, p. 70 and Table 16, p. 47) with the neurological impairment. ROM should not be used, as this would be accounted for in the neurologic portion of the rating

Workshop Case #1:

Patient is a 38-year-old female with severe bilateral lower extremity CRPS, confirmed on both bone scan and stress thermogram, with an initially positive response to sympathetic blocks. Her rehabilitation has been complicated by DVT and she presents as wheelchair bound with a +2 bilateral lower extremity edema to mid-thigh, discolored, cold legs with obvious cyanosis, mottled lace-like purplish discoloration of the skin, nail changes, and severe allodynia/hyperpathia bilaterally. The patient's edema has been repeatedly documented to be persistent and she develops increased leg pain when ambulating with a walker or crutches for greater than 200 to 400 feet. She is unsafe on non-level surfaces for ambulation. The pain is diffuse and does not localize to a specific dermatomal or peripheral nerve distribution.

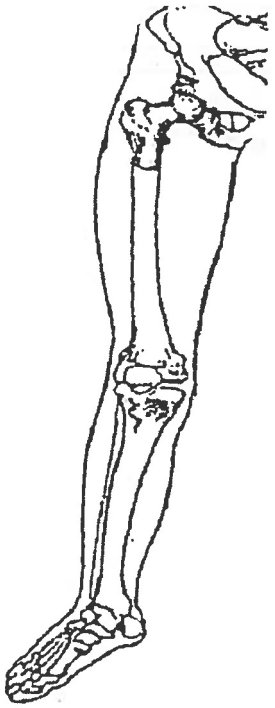
Proprioception is significantly impaired in the right more than left toes.

Using the lower extremity worksheet, calculate an impairment rating.

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name _____ SIDE ☐ R ☐ L Date _____

	Abnormal Motion					List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
	Table 37, p.66	Dorsiflex	Plantar	Ankylosis	Impairment %			
Hind Foot	Angle°							
	Impairment %							
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 39, p.68	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis: p.68**		
Knee	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 41,42, p. 69 70	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis: p.72**		
Hip	Angle°							
	Impairment %							
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add Impairment% of ROM or use largest Ankylosis _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46, p. 72) =

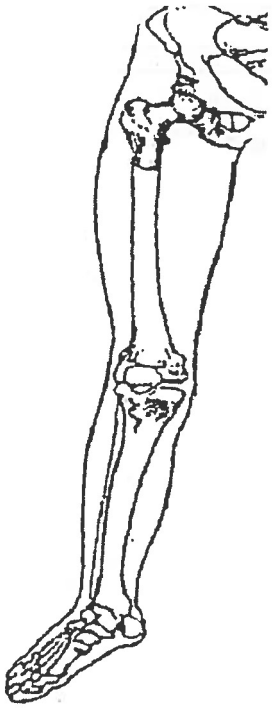
Answer: This is an example of a "centralized" form of CRPS.

- *Use AMA Guides Table 1, (p. 109) to rate CRPS*
- *Based on the above information, Class 2 gait impairment appears to best describe the patient's situation correlating to 25-35% whole person impairment.*
    - ***30% whole person impairment** due to spinal cord involvement is chosen.*
- *This patient also presents with a Class 2 Peripheral Vascular Impairment (AMA Guides Table 52, p. 79) as a complication of the CRPS, correlating with a 10-35% lower extremity impairment for <u>each leg</u>.*
    - *20% impairment of <u>each extremity</u> due to vascular disease is chosen.*
    - ***Convert** the 20% lower extremity impairment to whole person using AMA Guides Table 46, p. 72 which results in **8% whole person impairment** for <u>each leg</u> as a result of vascular complications of CRPS.*
    - ***Combine** the above whole person values (**30%, 8%, 8%**) using the Combined Values Chart = **41%** whole person impairment*

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Case 1 answer SIDE R L Date _____

	Abnormal Motion					List Other Disorders	Regional Impairment%	Amputation % (Table 47)
Hind Foot	**Table 37**	Dorsiflex	Plantar	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 38	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
Knee	**Table 39**	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis:**		
	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
Hip	**Table 41,42**	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis:**		
	Angle°							
	Impairment %							
	Table 43	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add Impairment% of ROM or use largest Ankylosis _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: **Class 2 (Table 52, p. 79), bilateral** = **20%, bilateral**

Total Lower Extremity Impairment: = **20%** (left) **& 20%** (right)

Impairment of Whole Person (Use Table 46) **Convert 20% to 8% (Table 46)** ***per side*** **30% CRPS (Gait Class 2, Table 1 p. 109)** ***Combine*** **30+8+8** = **41%**

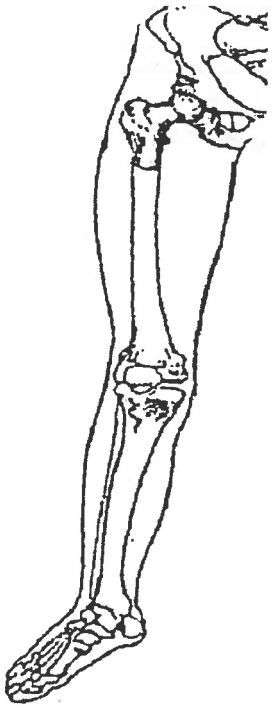
Workshop Case #2:
S.S. is referred to you for an impairment rating. She has been diagnosed with confirmed CRPS II which affects her right foot over the lateral plantar surface. On your examination, S.S. presents with a mildly cool right foot with trace medial malleolar edema, slight cyanosis distally, mild hyperpathia over the lateral plantar surface, positive Tinel's over the tarsal tunnel, and questionable thickening of the nails. She lacks 10 degrees of dorsiflexion, 5 degrees of plantarflexion, 15 degrees of eversion, and 10 degrees of inversion. She can stand but walks with difficulty, guarding the right foot. Distal strength is normal on gross testing. Her affect is clearly depressed and somewhat labile, with obvious pain behaviors including occasional verbal outbursts..

Calculate an impairment rating.

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name _____ SIDE ☐ R ☐ L Date _____

	Abnormal Motion					List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
	Table 37, p.66	Dorsiflex	Plantar	Ankylosis	Impairment %			
Hind Foot	Angle°							
	Impairment %							
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 39, p.68	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis: p.68**		
Knee	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 41,42, p. 69 70	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis: p.72**		
Hip	Angle°							
	Impairment %							
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add Impairment% of ROM or use largest Ankylosis _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46, p. 72) =

Answer:

This is an example of confirmed CRPS II (causalgia) affecting the lateral plantar nerve. The rating should be done as a peripheral nerve injury, rating both the sensory and motor components of the nerve if the nerve has both sensory and motor functions.

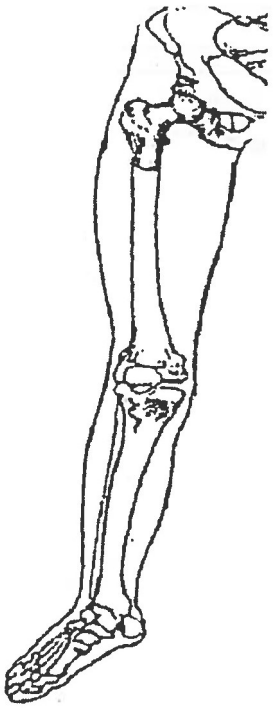
1. Identify the nerve from the Nerve Reference Chart and determine the total value of the nerve.
   - Sensory Nerve, Tibial nerve- lateral plantar branch: *AMA Guides* Table 51, p. 77 - Column 1 = **5%**
   - Motor Nerve, Tibial nerve- lateral plantar branch: *AMA Guides* Table 51, p. 77 - Column 2 = **5%**
2. Identify the grade of the *sensory nerve* using *AMA Guides* Table 10, p. 42.
   - Grade 5 (81-95%): Decreased sensation with severe pain, which may cause outcries as well as prevent activity (major causalgia) = **90%** is chosen
3. Multiply the total *sensory value* for the median nerve by the graded value of the *sensory* nerve.
   - *Sensory nerve*: 5% x 90% = **4.5 rounded up to 5%**
4. Identify the grade of the *motor nerve* using *AMA Guides* Table 11, p. 42.
   - Grade 1 (0%): (Distal strength was reported as normal)
5. Multiply the total *motor value* for the median nerve by the graded value of the *motor* nerve.
   - *Motor nerve*: 5% x 0% = **0%**
6. **Combine** *sensory* and *motor* nerve impairments: **5% and 0% = 5%.**
7. **Convert** the peripheral nerve lower extremity impairment rating to whole person using *AMA Guides* Table 46 (p. 72)
   - 5% lower extremity nerve rating converts to **2% whole person rating**
8. **Combine** this value with other whole person impairments for the final whole person rating.
   - In this case, no other impairments were found so the final impairment rating is **2% whole person.**
   - ROM is not considered for separate, additional impairment when the ROM limitations are a direct result of neurologic injury (p. 73)

Note: An alternative, Spinal/Cord rating could be done using Table 1 (p. 109)

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name CRPS Case 2 answers SIDE ☐ R ☐ L Date _____

	Abnormal Motion					List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
Hind Foot	**Table 37, p.66**	Dorsiflex	Plantar	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
					[1]	[2]		
	Add IMP% of ROM or use largest ANK _____					**IMP% =** _____	**Combine [1] and [2] =** _____	
Knee	**Table 39, p.68**	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis: p.68**		
	Angle°							
	Impairment %							
					[1]	[2]		
	Add IMP% of ROM or use largest ANK _____					**IMP% =** _____	**Combine [1] and [2] =** _____	
Hip	**Table 41,42, p. 69 70**	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis: p.72**		
	Angle°							
	Impairment %							
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
					[1]	[2]		
	Add Impairment% of ROM or use largest Ankylosis _____					**IMP% =** _____	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation **5%** B. Motor _____

Combined Sensory/Motor = **5**

5% (Tibial nerve- lateral plantar branch) x 90% (Grade 5, 81-95%)= 4.5, round up to 5%

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: = **5**

Impairment of Whole Person (Use Table 46, p. 72) = **2**

Upper Extremity Impairment Ratings

AMA Guides, 3rd Edition, revised - Chapter 3 (p. 11)

Objectives:

1) Identify the steps for determining an impairment with an amputation of a digit.
2) Determine the steps for performing an impairment rating of the digits with range of motion and sensory deficits.
3) Identify the steps for performing an impairment rating of the wrist, elbow, and shoulder.
4) Determine the steps for performing an impairment rating using “Other Disorders” of the upper extremity.
5) Determine the steps for performing an impairment rating with a vascular disorder.

Summary/Steps for Determining Thumb Impairment Rating

1) Determine if the injury is an amputation if so, refer to Figure 7(p. 19) in *AMA Guides* to rate the impairment.
    a) Determine the length of the thumb remaining after amputation on the left side of the chart and
    b) Consult the top of the chart to determine the impairment.
    c) Document the percent impairment on the Upper Extremity Worksheet - Part 1 under “Amputation.”
2) Determine if there is sensory loss of the digit by performing 2 point discrimination testing as described on p.19 in *AMA Guides*.
    a) Determine how much of the digit has sensory loss by using Figure 7 (p. 19) in *AMA Guides*.
    b) Determine if the ulnar and/or radial nerve is involved.
    c) Determine if the sensory loss is total (>15mm) or partial (7-15mm)
    d) Apply the above information to Table 4 (p. 20) in *AMA Guides* to determine sensory impairment of the thumb.
        i) If both radial and ulnar nerves are involved, **add** the ulnar and radial impairment values to determine the for the total sensory impairment.
    e) Document the percent impairment on the Upper Extremity Worksheet - Part 1 under “Sensory Loss.”
3) Measure the maximum range of motion (ROM) of the thumb joints and document the values on the Upper Extremity Worksheet - Part 1 under “Abnormal Motion.”
    a) Determine the percentage of impairment for ROM of the *thumb using AMA Guides:*
        - **Interphalangeal joint (IP)** using Figure 10 (p. 21) in the *AMA Guides*
        - **Metacarpophalangeal joint (MP)** using Figure 13 (p. 22) in the *AMA Guides*

- **Carpometacarpal (CMC)** ROM impairment for lack of:
  - **adduction** using Table 5 (p. 23) in the *AMA Guides*
  - **radial abduction** using Table 6 (p. 23) in the *AMA Guides*
  - **opposition** using Table 7 (p. 24) in the *AMA Guides*

4) **Add** all range of motion deficits of the *thumb (CMC+MP+IP)* for the final range of motion impairment rating.
5) **Combine** impairments from amputation, sensation, range of motion and any other applicable disorders to determine the *Total Thumb Impairment*.
6) **Convert** the digit impairment to hand impairment using Table 1 (p. 15) in *AMA Guides*.
    a) Column 1 is for the thumb.
7) **Add** all hand impairment percentages for the thumb, index, middle, ring and little fingers to determine the *Total Hand Impairment* and record at the bottom of the Upper Extremity Worksheet - Part 1.
8) **Convert** the *Total Hand Impairment* to *Upper Extremity Impairment* using Table 2 (p. 16) in *AMA Guides* and document on the bottom row of the Upper Extremity Worksheet - Part 1.
9) **Combine** with other upper extremity impairments of the same arm.
10) **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides* and document on the Upper Extremity Worksheet - Part 2, last row.

In summary, **convert** digit→hand→upper extremity→whole person

Summary/Steps for Determining Digit Impairment Rating:

1) Determine if the injury is an amputation if so, refer to Figure 17 (p. 25) in the *AMA Guides* to rate the impairment.
    a) Determine the length of the digit remaining after amputation on the left side of the chart.
    b) Consult the top of the chart to determine the impairment.
2) Document the percent impairment on the Upper Extremity Worksheet - Part 1 under “Amputation.”
3) Determine if there is sensory loss of the digit by performing 2 point discrimination testing as described on p. 25 in the *AMA Guides*.
    a) Determine how much of the digit has sensory loss by using Figure 17 (p. 25) in the *AMA Guides*.
    b) Determine if the ulnar and/or radial nerve is involved.
    c) Determine if the sensory loss is total (>15mm) or partial (7-15mm).
    d) Apply the above information to Table 8 (p. 25) (index, middle and ring fingers) and Table 4 (p. 20) (little finger) in *AMA Guides* to determine sensory impairment of the digit.
        i) If both radial and ulnar nerves are involved, **add** the ulnar and radial impairment values for the total sensory impairment.
    e) Document the percent impairment on the Upper Extremity Worksheet - Part 1 under “Sensory Loss.”

4) Measure the maximum range of motion (ROM) of the affected joints and document the values on the Upper Extremity Worksheet - Part 1 under "Abnormal Motion."
    a) Determine the percentage of impairment for ROM of the digits using *AMA Guides*:
        - **Distal interphalangeal joint (DIP)** using Figure 19 (p. 26)
        - **Proximal interphalangeal joint (PIP)** using Figure 21 (p. 27)
        - **Metacarpophalangeal (MP)** joint using Figure 23 (p. 28)
5) **Add** range of motion deficits for flexion and extension of each joint to determine joint ROM impairment.
6) **Combine** range of motion deficits from all involved joints of the digit for the total range of motion impairment. i.e.(MP+PIP+DIP) for the index finger.
7) **Combine** impairments from amputation, sensation, range of motion and any other applicable disorders for each digit to determine the *Total digit impairment*.
8) **Convert** the *Total Digit Impairment* to *Hand Impairment* using Table 1 (p. 15) in *AMA Guides.*
    a) Column 2 is for the index and middle finger.
    b) Column 3 is for the ring and little finger.
9) **Add** all hand impairment percentages for the thumb, index, middle, ring and little fingers to determine the *Total Hand Impairment* and record at the bottom of the Upper Extremity Worksheet - Part 1.
10) **Convert** the *Total Hand Impairment* to *Upper Extremity Impairment* using Table 2 (p. 16) in *AMA Guides* and document on the bottom row of the Upper Extremity Worksheet - Part 1.
11) **Combine** with other upper extremity impairments of the same arm.
12) **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) and document on the Upper Extremity Worksheet - Part 2, last row.

    In summary, **convert** digit→hand→upper extremity→whole person

Summary/Steps for Determining Wrist Impairment Rating

1) If the injury involves an amputation, refer to Figure 2 (p. 15) in *AMA Guides* to determine the impairment rating.
2) Document the percent impairment on the Upper Extremity Worksheet - Part 2 under "Amputation."
3) Measure the maximum range of motion (ROM) of the wrist and document values under "Abnormal Motion" on the Upper Extremity Worksheet - Part 2.
    a) Use the *AMA Guides* to determine the percentage of impairment for:
        - **Flexion and extension** using Figure 26 (p. 29).
        - **Radial and ulnar deviation** using Figure 29 (p. 31).
4) **Add** all range of motion deficits to determine the total wrist ROM impairment rating.
5) **Combine** impairments for ROM and any other applicable disorders to determine the *Upper Extremity Impairment* for the wrist.

6) **Combine** the Upper Extremity Impairment for the wrist with other upper extremity impairment ratings on the same arm for the total *Upper Extremity Impairment* rating.
7) **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides*.

Summary/Steps for Determining Elbow Impairment Rating

1) If the injury is an amputation, refer to Figure 2 (p. 15) in *AMA Guides* to determine the impairment rating.
    a) Document the percent impairment on the Upper Extremity Worksheet - Part 2 under "Amputation."
2) Measure the maximum range of motion (ROM) of the elbow and document measurements under "Abnormal Motion" on the Upper Extremity Worksheet - Part 2.
    a) Use the *AMA Guides* to determine the percentage of impairment for:
        - **Flexion and extension** using Figure 32 (p. 32).
        - **Supination and pronation using** Figure 35 (p. 33).
3) **Add** all range of motion deficits to determine the elbow ROM impairment rating.
4) **Combine** impairments for ROM and any other applicable disorders to determine the *Upper Extremity Impairment* for the elbow.
5) **Combine** the Upper Extremity Impairment for the elbow with other upper extremity impairment ratings on the same arm for the total *Upper Extremity Impairment* rating.
6) **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides*.

Summary/Steps for Determining Shoulder Impairment Rating

1) If the injury involves an amputation, refer to Figure 2 (p. 15) in *AMA Guides* to determine the impairment rating.
    a) Document the percent impairment on the Upper Extremity Worksheet - Part 2 under "Amputation."
2) Measure the maximum range of motion (ROM) of the shoulder and document measurements under "Abnormal Motion" on the Upper Extremity Worksheet - Part 2.
    a) Use the *AMA Guides* to determine the percentage of impairment for:
        - **Flexion and extension** using Figure 38 (p. 35).
        - **Abduction and adduction** using Use Figure 41 (p. 36).
        - **Internal and external rotation** using Figure 44 (p. 37).
3) **Add** the range of motion deficits to determine the shoulder ROM impairment rating.
4) **Combine** impairments for ROM and any other applicable disorders to determine the *Upper Extremity Impairment* of the shoulder.
5) **Combine** the Upper Extremity Impairment for the shoulder with other upper extremity impairment ratings on the same arm for the total *Upper Extremity Impairment* rating.

6) **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides*.

Summary/Steps for Determining Peripheral Nervous System Disorders
Peripheral nerve disorders are determined as described in the Nervous System Impairment Chapter.

Summary/Steps for Determining Vascular Disorders

1) Determine the class of impairment by referring to Table 16 (p. 47) in *AMA Guides*.
2) Document the percent impairment under Section IV - " Peripheral Vascular System Impairment" on the Upper Extremity Worksheet - Part 2.
3) **Combine** the vascular impairment with other upper extremity impairments on the same arm for the total upper extremity impairment using the appropriate section on the Upper Extremity Worksheet.
4) **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides*.

Summary/Steps for Determining Other Disorders of the Upper Extremity
These tables must **ONLY** be used when other measures of impairment have **NOT** adequately addressed the patient's impairment. They are specific to the body part. Refer to the Other Disorders Section of the Upper Extremity chapter in this curriculum for specific details.

References/Links:
Upper Extremity Worksheet - Part 1 (hand)
Upper Extremity Worksheet - Part 2 (wrist, elbow, shoulder) - needed for hand to convert to whole person
Apportionment Calculation Worksheet, if applicable
Medical Treatment Guidelines: Shoulder Injury, Cumulative Trauma Conditions
Impairment Rating Tips (Desk Aid 11)

Core Content: Upper extremity impairment ratings are predominantly based on amputation, sensory loss (digits), range of motion deficits, peripheral nerve deficits and vascular disorders. Other disorders including joint crepitation, joint swelling, deviation, subluxation and dislocation, arthroplasty, carpal instability, muscle and tendons, and strength loss can be applied to ratings per specific instructions by the *AMA Guides*.

Upper Extremity Impairment General Principles:
The total value of the upper extremity is equal to 60% impairment of the whole person or 100% of the Upper extremity (Fig. 2, p. 15 *AMA Guides*). i.e. if the arm was amputated the maximum impairment assigned would be 60% whole person. The rater should keep this value in mind when determining impairment for the upper extremity, particularly if you are given the option to choose from a range of values. Impairment percentage assigned to the upper extremity for any condition should correlate to deficits of activities of daily living within the 60% total value.

All upper extremity ratings are **combined** in order from distal to proximal to determine the total upper extremity rating.

Refer to the *AMA Guides* Tables for the following conversions:
Digit impairment ratings are **converted** to hand units. (Table 1, p. 15)
Hand unit impairment is **converted** to upper extremity units. (Table 2, p. 15)
Upper extremity units are **converted** to whole person units (Table 3, p. 16)

Convert digit→hand→upper extremity→whole person

Shoulder, elbow and wrist impairments are documented in upper extremity units and **converted** to whole person (Table 3, p. 16).
Multiple impairments of the same upper extremity are **combined** at the upper extremity level and then **converted** to whole person. For example, a hand impairment is **converted** to upper extremity and then **combined** with a wrist impairment before **converting** to whole person.

Thumb Impairment
Utilize the Upper Extremity Worksheet - Part 1 for documenting the calculation of impairment ratings.

Amputation
The impairment percentage of the thumb can be calculated using Figure 7 (p. 19) in the *AMA Guides.*

- Determine the length of the thumb remaining after amputation on the left side of Figure 7.
- Consult the top of Figure 7 to determine the percentage of thumb impairment.

Sensory Loss
Determine sensory loss by performing 2 point discrimination testing.

- 2 point discrimination greater than 15mm = total sensory loss or 100% sensory impairment
- 2 point discrimination between 15-7 mm = partial sensory loss or 50% sensory impairment
- 2 point discrimination equal to or less than 6 mm = normal sensation or 0% sensory impairment

- Determine the length of the thumb involved using the same corresponding charts outlined under “amputation” above - Figure 7 (p. 19) in the *AMA Guides.*
- Determine if the ulnar and/or radial nerve is involved.
    - Determine the sensory loss of the thumb using Table 4 (p. 20) in the *AMA Guides.*
        - The length of the digit is indicated in the left column, ulnar and radial nerve in separate columns with total and partial loss indicated.
        - If both nerves are involved, **add** the ulnar and radial impairment values for the percentage of impairment.

Range of Motion:

Measure the maximum range of motion of the affected joints and document the values on the Upper Extremity Worksheet - Part 1.

Figures used for ROM impairment determination have the following abbreviations:

- Measurement values are indicated in the “V” column.
- Flexion impairment is indicated in the IF% column.
- Extension impairment is indicated in the IE% column.
- Ankylosis impairment is indicated in the IA% column (rarely used).

Thumb:

- Determine the percentage of thumb **interphalangeal joint (IP)** range of motion impairment using Figure 10 (p. 21) in the *AMA Guides.*
    - Flexion values listed are 0-80 degrees.
    - Extension values listed are 0-30 degrees.
        - *Note:* 0 degrees of thumb IP extension = 1% impairment
- Determine the percentage of thumb **metacarpophalangeal joint (MP)** range of motion impairment using Figure 13 (p. 22) in the *AMA Guides.*
    - Flexion values listed are 0-60 degrees.
    - Extension values listed are 0-40 degrees.
- Determine the percentage of **thumb carpometacarpal (CMC)** range of motion impairment for lack of:
        - **adduction** using Table 5 (p. 23) in the *AMA Guides*
        - **radial abduction** using Table 6 (p. 23) in the *AMA Guides*
        - **opposition** using Table 7 (p. 24) in the *AMA Guides*
    - *Note*: Lost and retained columns are not used and should be crossed out.
    - If the joint is ankylosed, use section b of the table.
- **Add** all range of motion deficits of the thumb for the final range of motion impairment rating.

- Record the values under the Abnormal Motion Column and under the Hand Impairment Percentage-Abnormal Motion Column of the Upper Extremity Worksheet - Part 1.

Digit Impairment

Amputation

The impairment percentage of digits can be calculated using Figure 17, (p. 25) in the *AMA Guides.*

- Determine the length of the digit remaining after amputation on the left side of Figure 17.
- Consult the top of Figure 17 to determine the digit impairment.

Sensation

- Determine the length of the digits involved using the same corresponding charts outlined under "amputation" above - Figure 17 (p. 25) in the *AMA Guides.*
- Determine if the ulnar and/or radial nerve is involved.
    - Determine the sensory loss of the little finger using Table 4 (p. 20), index, middle and ring fingers using Table 8 (p. 25) in the *AMA Guides.*
        - The length of the digit is indicated in the left column, ulnar and radial nerve in separate columns with total and partial loss indicated.
        - If both nerves are involved, **add** the ulnar and radial impairment values for the percentage of impairment.
- Determine sensory loss by performing 2 point discrimination testing.
    - 2 point discrimination greater than 15mm = total sensory loss or 100% sensory impairment
    - 2 point discrimination between 15-7 mm = partial sensory loss or 50% sensory impairment
    - 2 point discrimination equal to or less than 6 mm = normal sensation or 0% sensory impairment

Range of Motion

Measure the maximum range of motion of the affected joints and document the values on the Upper Extremity Worksheet - Part 1.

Figures used for ROM impairment determination have the following abbreviations:

- Measurement values are indicated in the "V" column.
- Flexion impairment is indicated in the IF% column.
- Extension impairment is indicated in the IE% column.
- Ankylosis impairment is indicated in the IA% column (rarely used).

Digits

- Determine the percentage of impairment for **distal interphalangeal joint (DIP)** range of motion using Figure 19 (p. 26) in the *AMA Guides.*
    - Flexion values listed are 0-70 degrees.
    - Extension values listed are 0-30 degrees.
- Determine the percentage of impairment for **proximal interphalangeal joint (PIP)** range of motion using Figure 21 (p. 27) in the *AMA Guides.*
    - Flexion values listed are 0-100 degrees.
    - Extension values listed are 0-30 degrees.
- Determine the percentage of impairment for **metacarpophalangeal joint (MP)** range of motion using Figure 23 (p. 28) in the *AMA Guides.*
    - Flexion values listed are 0-90 degrees.
    - Extension values listed are 0-20 degrees.
        - *Note:* 0 degrees of MP extension = 5% impairment.
- **Add** range of motion deficits at each joint level .
- **Combine** range of motion deficits from all involved joints of the digit for the range of motion impairment.
- Record the values under the Abnormal Motion Column and under the Hand Impairment Percentage-Abnormal Motion Column of the Upper Extremity Worksheet - Part 1.

Isolated Digit Impairment:

- **Combine** deficits from amputation, sensation, range of motion and any other applicable disorders for each digit for total *digit* impairment.
- **Convert** the digit impairment to hand impairment using Table 1 (p. 15) in the *AMA Guides.*
    - *Note***:** *when referring to Table 1:*
        - Column 1 is for the thumb.
        - Column 2 is for the index and middle finger.
        - Column 3 is for the ring and little finger.
- **Convert** the total hand impairment to upper extremity impairment using Table 2 (p. 16) in the *AMA Guides.*
- Record the upper extremity value of the hand at the bottom of the Upper Extremity Worksheet - Part 1 and on Section II of the Upper Extremity Worksheet - Part 2.
- If no other impairments are present for the same extremity, **convert** the upper extremity impairment to whole person using Table 3 (p. 16) in the *AMA Guides* and record at the bottom of the Upper Extremity Worksheet - Part 2.

Multiple Digit Involvement:

- After determining total hand impairment of each digit as described above, **add** all impairments of each digit to determine the total hand impairment.
- Record the total hand impairment in the row entitled "total hand impairment" on the Upper Extremity Worksheet - Part 1.
- **Convert** the total hand impairment to upper extremity impairment using Table 2 (p. 16) in the *AMA Guides* and record this value of the hand at the bottom of the Upper Extremity Worksheet - Part 2.
- If no other impairments are present for the same extremity, **convert** the upper extremity impairment to whole person using Table 3 (p. 16) in the *AMA Guides* and record at the bottom of the Upper Extremity Worksheet - Part 2.

Additional upper extremity impairment ratings of the same extremity (wrist, elbow, shoulder) along with the hand:

- Utilize the Upper Extremity Worksheet - Part 2 to calculate the final upper extremity impairment rating by **combining** all impairments of the same extremity at the upper extremity level by using the Combined Values Chart (p. 254) in the *AMA Guides*.

Wrist Impairment

Utilize the Upper Extremity Worksheet - Part 2 for documenting the calculation of impairment rating.

Amputation

- Use Figure 2 (p. 15) in the *AMA Guides* to determine impairment rating.
  - Amputation at the wrist is 92% impairment of the upper extremity.
- Record the values on the Upper Extremity Worksheet - Part 2 under the Amputation Column.

Range of Motion

- Measure the maximum range of motion (ROM) of the wrist and document values under "Abnormal Motion" on the Upper Extremity Worksheet - Part 2.
  - Use the *AMA Guides* to determine the percentage of impairment for:
    - **Flexion and extension** using Figure 26 (p. 29)**.**
    - **Radial and ulnar deviation** using Figure 29 (p. 31).
- **Add** all range of motion deficits to determine the total wrist ROM impairment rating.

- **Combine** impairments for ROM and any other applicable disorders to determine the *Upper Extremity Impairment* for the wrist.
- **Combine** the Upper Extremity Impairment for the wrist with other upper extremity impairment ratings on the same arm for the total *Upper Extremity Impairment* rating.
- **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides*.

Elbow Impairment

Utilize the Upper Extremity Worksheet - Part 2 for documenting the calculation of impairment rating.

Amputation

- Use Figure 2 (p. 15) of the *AMA Guides* to determine impairment rating.
    - Amputation at the elbow is 96% impairment of the upper extremity.
- Record the values on the Upper Extremity Worksheet - Part 2 under the Amputation Column.

Range of Motion

- Measure the maximum range of motion (ROM) of the elbow and document measurements under “Abnormal Motion” on the Upper Extremity Worksheet - Part 2.
    - Use the *AMA Guides* to determine the percentage of impairment for:
        - **Flexion and extension** using Figure 32 (p. 32).
        - **Supination and pronation using** Figure 35 (p. 33).
- **Add** all range of motion deficits to determine the elbow ROM impairment rating.
- **Combine** impairments for ROM and any other applicable disorders to determine the *Upper Extremity Impairment* for the elbow.
- **Combine** the Upper Extremity Impairment for the elbow with other upper extremity impairment ratings on the same arm for the total *Upper Extremity Impairment* rating.
- **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides*.

Shoulder Impairment

Utilize the Upper Extremity Worksheet - Part 2 for documenting the calculation of impairment rating.

Amputation

- Use Figure 2 (p. 15) in the *AMA Guides* to determine impairment rating.
    - Amputation at the shoulder equals 100% upper extremity impairment.

- Record the values on the Upper Extremity Worksheet - Part 2 under the Amputation Column.

Range of Motion

- Measure the maximum range of motion (ROM) of the shoulder and document measurements under “Abnormal Motion” on the Upper Extremity Worksheet - Part 2.
    - Use the *AMA Guides* to determine the percentage of impairment for:
        - **Flexion and extension** using Figure 38 (p. 35).
        - **Abduction and adduction** using Use Figure 41 (p. 36).
        - **Internal and external rotation** using Figure 44 (p. 37).
- **Add** the range of motion deficits to determine the shoulder ROM impairment rating.
- **Combine** impairments for ROM and any other applicable disorders to determine the *Upper Extremity Impairment* for the shoulder.
- **Combine** the Upper Extremity Impairment for the shoulder with other upper extremity impairment ratings on the same arm for the total *Upper Extremity Impairment* rating.
- **Convert** the *Upper Extremity Impairment* to *Whole Person* using Table 3 (p. 16) in *AMA Guides*.

Additional Information for Shoulder Impairment from the Division’s Impairment Rating Tips

- Resection arthroplasty referred to in the AMA Guides 3rd Edition (rev.) is used only for partial resection of the humeral head, a procedure rarely performed currently.
- Neither resection nor implant arthroplasty values should be used for a distal clavicular resection/excision. Providers may assign up to 10% upper extremity impairment for distal clavicular resection/excision.
- In general, subacromial arthroplasty (a term used to describe acromioplasty or subacromial decompression) should be rated using range of motion. There are some situations when loss of range of motion alone may not adequately represent the extent of the impairment following subacromial arthroplasty. In those cases, up to 10% upper extremity impairment may be assigned. Make sure the rationale is provided in the report.
- Partial Shoulder Joint Replacement: If a hemi-arthroplasty is performed, the rating will be 20%. This includes resurfacing of the humeral head via a resurfacing cap or stemmed humeral replacement. Crepitus and synovial changes should not be rated as this would be duplicative and the surgical procedure has presumably eliminated those anatomic derangements.
- Total Shoulder Arthroplasty: A 30% rating is given for total implant arthroplasty, and is defined as an implant arthroplasty of the humeral head accompanied by resurfacing of the glenoid with any substance including metal, polyethylene or soft tissue graft.

Additional Information for Rating of Extremities Using Contralateral Joint/ "Normalization" from the Division's Impairment Rating Tips

- In some cases, the contralateral joint is a better representation of the patient's pre-injury state than the *AMA Guides* population norms. The 3rd Revised Edition has little commentary on this procedure, however, the 5th Edition and the Division consider it reasonable to compare both extremities when there are specific conditions which would make the opposite, non-injured extremity serve as a better individual baseline. (This procedure is ***not* an apportionment procedure** as it does not reflect a prior pathologic condition with impairment; therefore, avoid using the term "apportionment" when referring to this process. This process can be termed "normalization.")
- Therefore, when deemed appropriate, the physician may subtract the contralateral joint ROM impairment from the injured joint ROM impairment. (An example would be a patient with limited knee flexion due to obesity.) However, this subtraction should not be done if the contralateral joint has a known previous injury because that joint may not reflect the 'normal' ROM for that individual. Make sure that you explain your methodology and your rationale in your report.

Pitfalls

If using normalization for upper extremity ROM, you must provide a worksheet for each upper extremity.

Peripheral Nerve Disorders

Peripheral nerve disorders are determined as described in Nervous System Impairment Chapter.

Grip and lateral pinch strength is rarely used for impairment ratings. If clear ADL deficits are not reflected in the range of motion and /or neurological ratings, or loss of strength from any non-neurological cause, it may be applicable.

Grip and lateral pinch strength is discussed under "Other Disorders of the Upper Extremity" later in this chapter and in the *AMA Guides*, p. 48.

ROM cannot be rated in addition to a motor nerve deficit if the motor nerve is causing lack of ROM. For example, a patient has weakness due to an ulnar nerve deficit. The physician rates the ulnar nerve impairment but cannot rate the wrist range of motion deficit as well, as this would be considered "double dipping."

Impairments Due to Vascular Disorders

Upper extremity vascular disorders are rated according to five (5) classes.

- Utilize the *AMA Guides* Table 16 (p. 47) to rate upper extremity vascular disorders.
    - *Note:* Pay specific attention to the use of "and" and "or" when determining the class category.
- Vascular disorder impairment values are **combined** with other upper extremity impairments.

Other Disorders of the Upper Extremity
These impairment rating categories are optional.

*These tables can **ONLY** be used when previous measures of impairment have **NOT** adequately addressed the patient's impairment.*

If an "other disorders" impairment is found, **combine** this rating with other impairments present.

Joint Crepitation:

- When ROM impairment is present, you must justify the need for crepitation as an additional impairment.
- Joint crepitation can reflect synovitis or cartilage degeneration.
- Determine joint crepitation severity (*AMA Guides* p. 48)
- Using *AMA Guides* Table 17 (p. 48), identify the affected upper extremity body part and joint involved for the impairment percentage.
- Multiply the value of joint crepitation severity with the percent upper extremity impairment from Table 17.

Joint Swelling due to Synovial Hypertrophy

- *Usually rated through loss of motion, **if full ROM** then synovial hypertrophy is **NOT** ratable.*
- Determine joint swelling due to synovial hypertrophy severity (*AMA Guides* p. 48)
- Using *AMA Guides* Table 17 (p. 48), identify the affected upper extremity body part and joint for the impairment percentage.
- Multiply the value of joint swelling severity with the percent upper extremity impairment from Table 17.

Digit Lateral Deviation

- Determine digit lateral deviation impairment (*AMA Guides* p. 49)
- Using *AMA Guides* Table 17 (p. 48), identify the affected upper extremity body part and joint for the impairment percentage.
- Multiply the value of digit lateral deviation joint impairment with the percent upper extremity impairment from Table 17.

Digit Rotational Deformity

- Measured during maximum active flexion of the finger.
- If other impairments of the same digit are present, rotational deformity impairment is combined with them.
- Determine digit rotation deformity impairment (*AMA Guides* p. 49)
- Using *AMA Guides* Table 17 (p. 48), identify the affected upper extremity body part and joint for the impairment percentage.
- Multiply the value of digit rotational deformity joint impairment with the percent upper extremity impairment from Table 17.

Persistent Joint Subluxation and Dislocation

- *Used **only** when there is **no range of motion impairment rating** for the joint.*
- Determine subluxation or dislocation deformity impairment (*AMA Guides* p. 49).
- Using *AMA Guides* Table 17 (p. 48), identify the affected upper extremity body part and joint for the impairment percentage.
- Multiply the value of joint subluxation or dislocation impairment with the percent upper extremity impairment from Table 17.

Joint Instability

- Excessive passive mediolateral motion is evaluated by comparing it with normal joint stability and graded to its degree of severity.
- Determine joint instability impairment (*AMA Guides* p. 49)
- Using *AMA Guides* Table 17 (p. 48), identify the affected upper extremity body part and joint for the impairment percentage.
- Multiply the value of joint instability impairment with the percent upper extremity impairment from Table 17.

Wrist and Elbow Joint Lateral Deviation

- Measured with the wrist or elbow in maximum active extension.
- Determine elbow or wrist joint lateral deviation impairment (*AMA Guides* p. 50)
- Using *AMA Guides* Table 17 (p. 48), identify the affected upper extremity body part and joint for the impairment percentage.
- Multiply the value of wrist and elbow lateral deviation with the percent upper extremity impairment from Table 17.

Carpal Instability **Without** ROM or strength deficits

- ***ONLY** rated if ROM and strength have no deficits.*
- Based on radiographic findings: refer to *AMA Guides* Table 18 (p. 50) for *upper extremity* impairment rating.

Arthroplasty

- Refer to *AMA Guides* Table 19 (p. 50) for upper extremity impairment ratings for resection and implant arthroplasty.
- If more than one joint in a digit is involved, refer to the footnotes in *AMA Guides* Table 19 (p. 50.)
- Resection arthroplasty is used only for partial resection of the humeral head, a procedure rarely performed.
- If a partial shoulder replacement (hemiarthroplasty) is performed, the rating is **20%**. (Impairment Rating Tips, p. 8).
    - Crepitus and synovial changes should not be rated in addition to partial shoulder replacement.
- For other arthroplasty procedures refer to Impairment Rating Tips, p. 7.

Musculotendinous Impairments and Intrinsic Tightness

Intrinsic Tightness Severity **WITHOUT** range of motion deficit

- Measure passive flexion of PIP joint with MP joint hyperextended (Bunnell's test).
- Determine percent digit impairment for intrinsic tightness (*AMA Guides* p. 52).
- Using *AMA Guides* Table 17 (p. 48), identify the unit value percentage of impairment for that digit.
- Multiply the value of intrinsic tightness with the unit value percentage of impairment for that digit in *AMA Guides* Table 17.
- Record the value in Figure 1 of the Upper Extremity Worksheet - Part 1 under the "other disorders" of the appropriate digit.

Constrictive Tenosynovitis **WITHOUT** range of motion deficit

- Determine percent digit impairment for constrictive tenosynovitis (trigger finger) - *AMA Guides* p. 52.
- Using *AMA Guides* Table 17 (p. 48), identify the unit value percentage of impairment for that digit.
- Multiply the value of constrictive tenosynovitis with the unit value percentage of impairment for that digit in *AMA Guides* Table 17.
- Record the value in Figure 1 of the Upper Extremity Worksheet - Part 1 under the "other disorders" of the appropriate digit.

Extensor Tendon Subluxation at MP Joint **WITHOUT** range of motion deficit

- Determine percent digit impairment for extensor tendon subluxation (*AMA Guides* p. 52).
- Using *AMA Guides* Table 17 (p. 48), identify the unit value percentage of impairment for that digit.
- Multiply the value of extensor tendon MP subluxation impairment with unit value percentage of impairment for that digit in *AMA Guides* Table 17.
- Record the value in Figure 1 of the Upper Extremity Worksheet - Part 1 under the "other disorders" of the appropriate digit.

Other Musculoskeletal System Defects

Note: A clear description of the magnitude of ADL deficit is required in order to use Strength Index for impairment ratings. The Strength Index Table only allows large increases of 10, 20 or 30% to the previously calculated rating.

Loss of Strength

- Rate **ONLY** when loss of strength cannot be adequately rated using the other sections, including neurological motor deficits.
- Neurological motor deficit and loss of strength must **NOT** be given for the same deficit.
- To perform a rating: at least three (3) measurements of grip and lateral pinch strength should be taken at several intervals in an examination.

- The three (3) measurements should have less than a 20% variation in order to establish reliability.
- At least three (3) reliable readings for each extremity are averaged.

$$\text{Strength Index} = \frac{\text{strength of the normal hand - strength of the abnormal hand}}{\text{strength of the normal hand}}$$

- Use *AMA Guides* Table 23 (p. 54) to translate the strength index into upper extremity impairment.
  - Use *AMA Guides* Table 21 and 22 (p. 53) if there is no uninjured hand to determine normal strength.

Exclusions/Omissions in the *AMA Guides*: The following tables and figures have misleading information and should not to be used for calculating impairments. It is preferable to cross out these sections to avoid confusion.

Table/Figure #	Page #	Special note
Figure 3	15	
Figure 5	17	
Figure 7	19	Omit Total Transverse Sensory Loss Impairment % Section Only
Figure 9	21	
Figure 12	22	
Figure 14	22	
Table 5	23	Do not use Lost and Retained columns
Table 6	23	Do not use Lost and Retained columns
Figure 16	24	
Table 7	24	Do not use Lost and Retained columns
Figure 17	25	Omit Total Transverse Sensory Loss Impairment % Section Only
Figure 25	29	
Figure 28	30	

Workshop Case #1:
Laceration of left thumb at IP joint with loss of sensation of ulnar tip of digit (ulnar digital nerve injury).
Patient was taken to the OR: Repair of UDN of thumb.
After full recovery, patient is found to have 2-point discrimination = 8mm at ulnar tip of thumb.

Calculate the impairment rating using the attached worksheets.

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 1 (Hand)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion						Amputation	Sensory Loss	Other Disorders	Hand Impairment %
Record Motion, Ankylosis and Impairment %						Mark Level & Impairment %	Mark Type, Level & Impairment %	List Type & Impairment %	• Combine Digit IMP% • Convert to Hand IMP%
			Flexion	Extension	ANK	IMP%				
THUMB	**IP**	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
				Motion	ANK	IMP%			
	CMC	RAD ABD	Angle°						
			IMP%						
		ADD	CMS						
			IMP%						
		OPP	CMS						
			IMP%						
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Add Impairment %			**CMC + MP + IP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
			Flexion	Extension	ANK	IMP%				
INDEX	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP=** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
MIDDLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
RING	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
LITTLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**

Abnormal Motion	[1]
Amputation	[2]
Sensory Loss	[3]
Other Disorders	[4]
Digit Impairment % • Combine 1, 2, 3, 4	

Total Hand impairment (Add Hand Impairment % For Thumb + Index + Middle + Ring + Little Finger)	
Upper Extremity Impairment (**Convert Total Hand Impairment % To Upper Extremity Impairment %)	

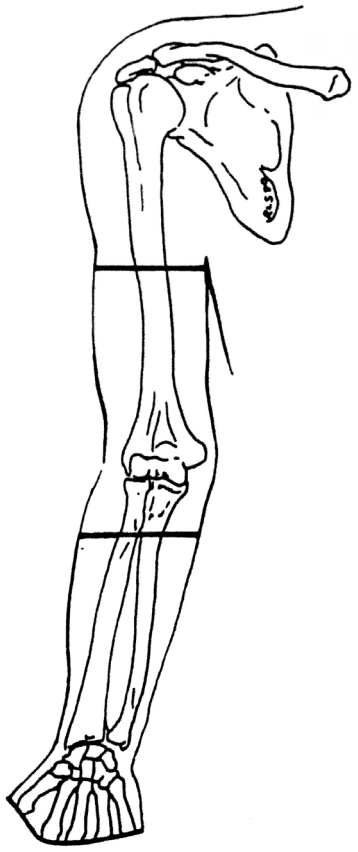
Combined Values Chart; Use Table 1 (Digits to Hand); ** Use Table 2 (Hand To Upper Extremity)

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** _____ [1]				**IMP% =** _____ [2]		**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand _____% + Wrist _____% + Elbow _____% + Shoulder _____%)	=
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=

Total Upper Extremity Impairment (Combine I + II + III + IV + V)	=
Impairment of Whole Person (Use Table 3)	=

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Answer:
Determine the functional length of the digit involved by referring to Figure 7 Thumb Impairment (*AMA Guides* page 19) - loss at the IP joint.
Two-point discrimination value of 8mm is rated as partial sensory loss per page 19 of the *AMA Guides*.

Next, refer to Table 4, p. 20 to identify the 50% length of the thumb, partial sensory loss of the ulnar digital nerve = 8% digit impairment.

Convert 8% digit impairment to hand using Table 1, column one for thumb (*AMA Guides* p. 15) = **3%** hand impairment.
Convert 3% hand impairment to upper extremity using Table 2 (*AMA Guides* p. 16) = **3%** upper extremity impairment.
Convert 3% upper extremity impairment to whole person using Table 3 (*AMA Guides* p. 16) = **2%** whole person impairment.

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 1 (Hand)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

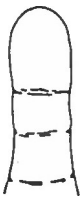
Occupation _____ Diagnosis _____

Abnormal Motion	Amputation	Sensory Loss	Other Disorders	Hand Impairment %
Record Motion, Ankylosis and Impairment %	Mark Level & Impairment %	Mark Type, Level & Impairment %	List Type & Impairment %	• Combine Digit IMP% • Convert to Hand IMP%

THUMB

		Flexion	Extension	ANK	IMP%
IP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

			Motion	ANK	IMP%
CMC	RAD ABD	Angle°			
		IMP%			
	ADD	CMS			
		IMP%			
	OPP	CMS			
		IMP%			



IP= 50% digit length
8 mm= partial loss.
Table 4= 8%

Abnormal Motion [1]	
Amputation [2]	
Sensory Loss [3]	**8**
Other Disorders [4]	
Digit Impairment % • Combine 1, 2, 3, 4	**8**
Hand Impairment % • Convert above	**3**

[1] **Add Impairment % CMC + MP + IP =** _____

[2] **IMP% =** _____

[3] **IMP% =** **8**

[4] **IMP% =** _____

INDEX

		Flexion	Extension	ANK	IMP%
DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

Abnormal Motion [1]	
Amputation [2]	
Sensory Loss [3]	
Other Disorders [4]	
Digit Impairment % • Combine 1, 2, 3, 4	
Hand Impairment % • Convert above	

[1] **Combine Impairment % MP+PIP+DIP=** _____

[2] **IMP% =** _____

[3] **IMP% =** _____

[4] **IMP% =** _____

MIDDLE

		Flexion	Extension	ANK	IMP%
DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

Abnormal Motion [1]	
Amputation [2]	
Sensory Loss [3]	
Other Disorders [4]	
Digit Impairment % • Combine 1, 2, 3, 4	
Hand Impairment % • Convert above	

[1] **Combine Impairment % MP+PIP+DIP =** _____

[2] **IMP% =** _____

[3] **IMP% =** _____

[4] **IMP% =** _____

RING

		Flexion	Extension	ANK	IMP%
DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

Abnormal Motion [1]	
Amputation [2]	
Sensory Loss [3]	
Other Disorders [4]	
Digit Impairment % • Combine 1, 2, 3, 4	
Hand Impairment % • Convert above	

[1] **Combine Impairment % MP+PIP+DIP =** _____

[2] **IMP% =** _____

[3] **IMP% =** _____

[4] **IMP% =** _____

LITTLE

		Flexion	Extension	ANK	IMP%
DIP	Angle°				
	IMP%				
PIP	Angle°				
	IMP%				
MP	Angle°				
	IMP%				

Abnormal Motion [1]	
Amputation [2]	
Sensory Loss [3]	
Other Disorders [4]	
Digit Impairment % • Combine 1, 2, 3, 4	
Hand Impairment % • Convert above	

[1] **Combine Impairment % MP+PIP+DIP =** _____

[2] **IMP% =** _____

[3] **IMP% =** _____

[4] **IMP% =** _____

Total Hand impairment (Add Hand Impairment % For Thumb + Index + Middle + Ring + Little Finger)	**3**
Upper Extremity Impairment (**Convert Total Hand Impairment % To Upper Extremity Impairment %)	**3**

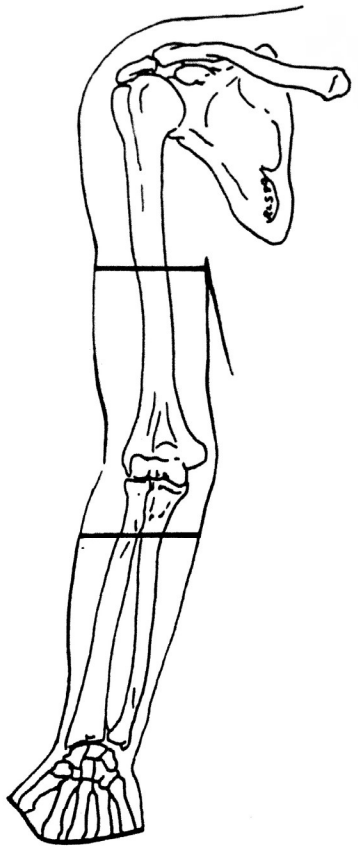
Combined Values Chart; Use Table 1 (Digits to Hand); ** Use Table 2 (Hand To Upper Extremity)

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** [1] _____					**IMP% =** [2] _____	
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** [1] _____					**IMP% =** [2] _____	
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** [1] _____					**IMP% =** [2] _____	**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand 3 % + Wrist _____% + Elbow _____% + Shoulder _____%)	= **3**
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=
Total Upper Extremity Impairment (Combine I + II + III + IV + V)	= **3**
Impairment of Whole Person (Use Table 3)	= **2**

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Workshop Case #2:
A construction worker sustains a crush injury of the right thumb and index finger. Any missing information is to be considered normal.

Thumb:

- Amputated at IP joint
- MP ROM: -10° extension, 30° flexion
- Sensation at repaired tip of amputation site = 6 mm
- No significant pain with cold temperatures

Index:

- No amputation
- Radial digital nerve cut at PIP and repaired
    - Final 2-point discrimination = 7-8mm
- ROM (extension/flexion)
    - MP: 20°/90°
    - PIP: -10°/90°
    - DIP: -10°/50°
- Grip strength: overall decreased with grip strength trials

Trial #	#1	#2	#3	#4	#5
Right hand	26	50	60	52	37
Left hand	30	90	103	84	40

Index finger gets cold at times but does not prevent activity.

Calculate the impairment rating to whole person.

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 1 (Hand)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion						Amputation	Sensory Loss	Other Disorders	Hand Impairment %
Record Motion, Ankylosis and Impairment %						Mark Level & Impairment %	Mark Type, Level & Impairment %	List Type & Impairment %	• Combine Digit IMP% • Convert to Hand IMP%
			Flexion	Extension	ANK	IMP%				
THUMB	**IP**	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
				Motion	ANK	IMP%			
	CMC	RAD ABD	Angle°						
			IMP%						
		ADD	CMS						
			IMP%						
		OPP	CMS						
			IMP%						
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Add Impairment %			**CMC + MP + IP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
			Flexion	Extension	ANK	IMP%				
INDEX	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP=** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
MIDDLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
RING	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
LITTLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**

Abnormal Motion	[1]
Amputation	[2]
Sensory Loss	[3]
Other Disorders	[4]
Digit Impairment % • Combine 1, 2, 3, 4	

Total Hand impairment (Add Hand Impairment % For Thumb + Index + Middle + Ring + Little Finger)	
Upper Extremity Impairment (**Convert Total Hand Impairment % To Upper Extremity Impairment %)	

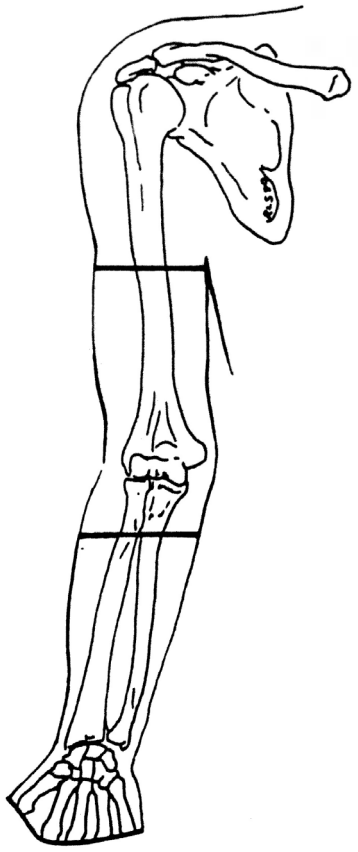
Combined Values Chart; Use Table 1 (Digits to Hand); ** Use Table 2 (Hand To Upper Extremity)

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** _____ [1]				**IMP% =** _____ [2]		**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand _____% + Wrist _____% + Elbow _____% + Shoulder _____%)	=
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=

Total Upper Extremity Impairment (Combine I + II + III + IV + V)	=
Impairment of Whole Person (Use Table 3)	=

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Answer:

Thumb

- Amputated at IP joint: *AMA Guides* Figure 7, p. 19 = **50%**
- Sensory: 0%
- ROM:
    - MP: *AMA Guides* Figure 13, p. 22 = 3% flexion/1% extension, **add** to = **4%** total
      50% (amputation) **combined** with 4%(ROM) = thumb impairment of **52%**

Index - Sensory

- Determine digit length by using *AMA Guides* Figure 17, p. 25 (PIP) = 80%
- Determine partial or total sensory loss from 2-point discrimination = partial loss radial nerve
- Use *AMA Guides* Table 8, p. 25 to determine sensory loss = **12%** sensory impairment

Index - ROM

- Determine ROM impairment (extension/flexion)
    - MP: *AMA Guides* Figure 23, p. 28 = 0%
    - PIP: *AMA Guides* Figure 21, p. 27 = 3%/6%, **add** to 9% total
    - DIP: *AMA Guides* Figure 19, p. 26 = 2%/10%, **add** to 12 % total
- **Combine** 9% with 12% = **20%** total index ROM impairment

Index - Sensory and ROM

- Combine sensory (12%) with ROM (20%) = **30%** index finger impairment

Convert digit to hand to upper extremity impairment

- **Convert** thumb (digit) rating to hand using *AMA Guides* Table 1, p. 15-1st column
    - 52% digit impairment = **21%** hand impairment
- **Convert** index finger rating to hand using *AMA Guides* Table 1, p. 15 - 2nd column
    - 30% digit impairment = **6%** hand impairment
- **Add** the hand impairments 21% and 6% for the final hand impairment = **27%**
- **Convert** the hand impairment to upper extremity using *AMA Guides* Table 2, p. 16:
    - 27% hand = **24%** upper extremity rating

Grip Strength: should only be used when there is an additional objective injury that cannot be accounted for using ROM and amputation, and causes an impairment of ADLs.
Values that are not within 20% of the other trials are not reliable and are not used.

- In this case, the grip strength is not used when calculating the impairment rating as the physician felt the ROM and sensory loss is sufficient. The

total impairment rating with ROM and sensory nerve involvement = **24%** upper extremity impairment.
- **Convert** the upper extremity impairment to whole person using *AMA Guides* Table 3, p. 16 = **14%** whole person impairment.

If the provider had ample justification for including the grip strength as part of the impairment, the calculations would be as follows per instructions in the *AMA Guides*, pp. 52-54.

Trial #	~~#1~~	#2	#3	#4	~~#5~~
Right hand	~~26~~	50	60	52	~~37~~
Left hand	~~30~~	90	103	84	~~40~~

- Three measurements of grip strength with less than 20% variation are utilized. Therefore, trial #1 and 5 are eliminated.
- Average strength right: 54
- Average strength left: 92

Strength Index = $\frac{\text{strength of the normal hand - strength of the abnormal hand}}{\text{strength of the normal hand}}$

- $\frac{92-54}{92}$ = .41 Strength index
- Refer to *AMA Guides* Table 23, p. 54 to determine the upper extremity strength impairment = **20%**

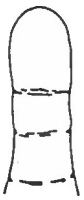
Total upper extremity impairment to whole person impairment

- **Combine** 24% hand upper extremity impairment with 20% grip strength impairment = **39%** total upper extremity impairment
- **Convert** upper extremity to whole person impairment using *AMA Guides* Table 3, p. 16 = **23%**

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 1 (Hand)** SIDE R L

Name Case 2 - Answer Age ____ Sex M F Dominant Hand R L Date ____

Occupation ____ Diagnosis ____

			Abnormal Motion				Amputation	Sensory Loss	Other Disorders	Hand Impairment %	
			Record Motion, Ankylosis and Impairment %				Mark Level & Impairment %	Mark Type, Level & Impairment %	List Type & Impairment %	• Combine Digit IMP% • Convert to Hand IMP%	
			Flexion	Extension	ANK	IMP%					
THUMB	IP	Angle°									
		IMP%									
	MP	Angle°	30	-10		4					
		IMP%	3	1							
				Motion	ANK	IMP%					
	CMC	RAD ABD Angle°								Abnormal Motion [1]	4
		IMP%								Amputation [2]	50
		ADD CMS					at IP			Sensory Loss [3]	0
		IMP%								Other Disorders [4]	
		OPP CMS								Digit Impairment % • Combine 1, 2, 3, 4	52
		IMP%									
						[1]	[2]	[3]	[4]	**Hand Impairment %**	
			Add Impairment % CMC + MP + IP = 4				**IMP% =** 50	**IMP% =** 0	**IMP% =** ____	**• Convert above**	21
			Flexion	Extension	ANK	IMP%					
INDEX	DIP	Angle°	50	10		12				Abnormal Motion [1]	20
		IMP%	10	2						Amputation [2]	
	PIP	Angle°	90	-10		9				Sensory Loss [3]	12
		IMP%	6	3						Other Disorders [4]	
	MP	Angle°	90	20		0				Digit Impairment % • Combine 1, 2, 3, 4	30
		IMP%	0	0							
						[1]	[2]	[3]	[4]	**Hand Impairment %**	
			Combine Impairment % MP+PIP+DIP= 20				**IMP% =** ____	**IMP% =** 12	**IMP% =** ____	**• Convert above**	6
MIDDLE	DIP	Angle°								Abnormal Motion [1]	
		IMP%								Amputation [2]	
	PIP	Angle°								Sensory Loss [3]	
		IMP%								Other Disorders [4]	
	MP	Angle°								Digit Impairment % • Combine 1, 2, 3, 4	
		IMP%									
						[1]	[2]	[3]	[4]	**Hand Impairment %**	
			Combine Impairment % MP+PIP+DIP = ____				**IMP% =** ____	**IMP% =** ____	**IMP% =** ____	**• Convert above**	
RING	DIP	Angle°								Abnormal Motion [1]	
		IMP%								Amputation [2]	
	PIP	Angle°								Sensory Loss [3]	
		IMP%								Other Disorders [4]	
	MP	Angle°								Digit Impairment % • Combine 1, 2, 3, 4	
		IMP%									
						[1]	[2]	[3]	[4]	**Hand Impairment %**	
			Combine Impairment % MP+PIP+DIP = ____				**IMP% =** ____	**IMP% =** ____	**IMP% =** ____	**• Convert above**	
LITTLE	DIP	Angle°								Abnormal Motion [1]	
		IMP%								Amputation [2]	
	PIP	Angle°								Sensory Loss [3]	
		IMP%								Other Disorders [4]	
	MP	Angle°								Digit Impairment % • Combine 1, 2, 3, 4	
		IMP%									
						[1]	[2]	[3]	[4]	**Hand Impairment %**	
			Combine Impairment % MP+PIP+DIP = ____				**IMP% =** ____	**IMP% =** ____	**IMP% =** ____	**• Convert above**	

Total Hand impairment (Add Hand Impairment % For Thumb + Index + Middle + Ring + Little Finger)	27
Upper Extremity Impairment (**Convert Total Hand Impairment % To Upper Extremity Impairment %)	24

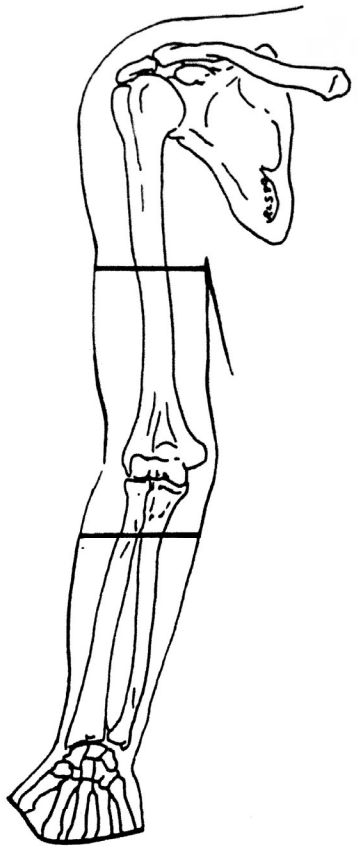
Combined Values Chart; Use Table 1 (Digits to Hand); ** Use Table 2 (Hand To Upper Extremity)

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE R L

Name **Case 2 answer** Age ____ Sex M F Dominant Hand R L Date ____

Occupation ____ Diagnosis ____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** [1]				**IMP% =** [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** [1]				**IMP% =** [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** [1]				**IMP% =** [2]		**IMP%**



I. Amputation Impairment (Other than Digits)		=
II. Regional Impairment of Upper Extremity (Combine Hand **24** % + Wrist ____% + Elbow ____% + Shoulder ____%)		= **24**
III. Peripheral Nervous System Impairment		=
IV. Peripheral Vascular System Impairment		=
V. Other Disorders (Not Included in Regional Impairment)	**Grip: 20%**	= **20**
Total Upper Extremity Impairment (Combine I + II + III + IV + V)	**Combine 24 and 20**	= **39**
Impairment of Whole Person (Use Table 3)		= **23**

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Worksheets:
Upper Extremity Worksheet - Part 1 (hand)
Upper Extremity Worksheet - Part 2 (wrist, elbow, shoulder) - needed for hand to convert to whole person
Apportionment Calculation Worksheet, if applicable

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 1 (Hand)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion						Amputation	Sensory Loss	Other Disorders	Hand Impairment %
Record Motion, Ankylosis and Impairment %						Mark Level & Impairment %	Mark Type, Level & Impairment %	List Type & Impairment %	• Combine Digit IMP% • Convert to Hand IMP%
			Flexion	Extension	ANK	IMP%				
THUMB	**IP**	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
				Motion	ANK	IMP%			
	CMC	RAD ABD	Angle°						
			IMP%						
		ADD	CMS						
			IMP%						
		OPP	CMS						
			IMP%						
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Add Impairment %			**CMC + MP + IP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
			Flexion	Extension	ANK	IMP%				
INDEX	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP=** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
MIDDLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
RING	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
LITTLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**

Abnormal Motion	[1]
Amputation	[2]
Sensory Loss	[3]
Other Disorders	[4]
Digit Impairment % • Combine 1, 2, 3, 4	

Total Hand impairment (Add Hand Impairment % For Thumb + Index + Middle + Ring + Little Finger)	
Upper Extremity Impairment (**Convert Total Hand Impairment % To Upper Extremity Impairment %)	

Combined Values Chart; Use Table 1 (Digits to Hand); ** Use Table 2 (Hand To Upper Extremity)

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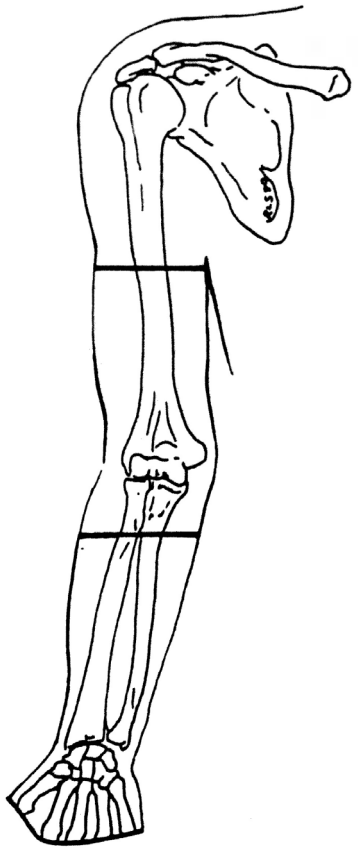
Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** _____ [1]				**IMP% =** _____ [2]		**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand _____% + Wrist _____% + Elbow _____% + Shoulder _____%)	=
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=

Total Upper Extremity Impairment (Combine I + II + III + IV + V)	=
Impairment of Whole Person (Use Table 3)	=

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

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Apportionment Calculation Worksheet

Patient Name: _____

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

- ☐ No → Do NOT apportion
- ☐ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:

- ☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
- ☐ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- ☐ The previous condition is **work related** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related** and is **disabling**[2] → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related and is NOT disabling**[2] → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53				%WP
ROM				%WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				%WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Upper Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% UE	
Nerve			% UE	
Other			% UE	
Final Combined Apportioned Rating			% UE	%WP

Lower Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% LE	
Nerve			% LE	
Other			% LE	
Final Combined Apportioned Rating			% LE	%WP

Other	**Current Total**	**Previous**	**Apportioned**	
			% ext	%WP
			% ext	%WP
			% ext	%WP
Final Combined Apportioned Rating			% ext	%WP

Example:

The patient had a previous lumbar strain/sprain with Table 53 diagnostic rating of 5% and 5% ROM impairment. The current injury involves L4-5 disc herniation, unoperated. Current ROM rating is 10%. Remember for Table 53 Sections II, III and IV, the available sub values cannot be combined as these values are designed to represent progression of the disease state that has occurred. Thus, as a condition worsens, the Table 53 diagnosis changes within these sections but combining is not allowed when accounting for the patient's current impairment.

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53	IIC: 7%	IIB: 5%		2 %WP
ROM	10%	5%		5 %WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				**7** %WP

Cumulative Trauma Conditions Impairment Ratings

State of Colorado Division of Workers' Compensation Cumulative Trauma Conditions Medical Treatment Guidelines

Objectives:

1) Discuss appropriate use of the Cumulative Trauma Conditions (CTC) rating system as outlined in the Medical Treatment Guideline (MTG).
2) Illustrate proper use of the Medical Treatment Guideline to assess medical causality of cumulative trauma conditions.
3) Demonstrate proper use of Medical Treatment Guideline for determining impairment rating of a work-related cumulative trauma condition.

Summary/Steps for Rating Cumulative Trauma Conditions (CTC):

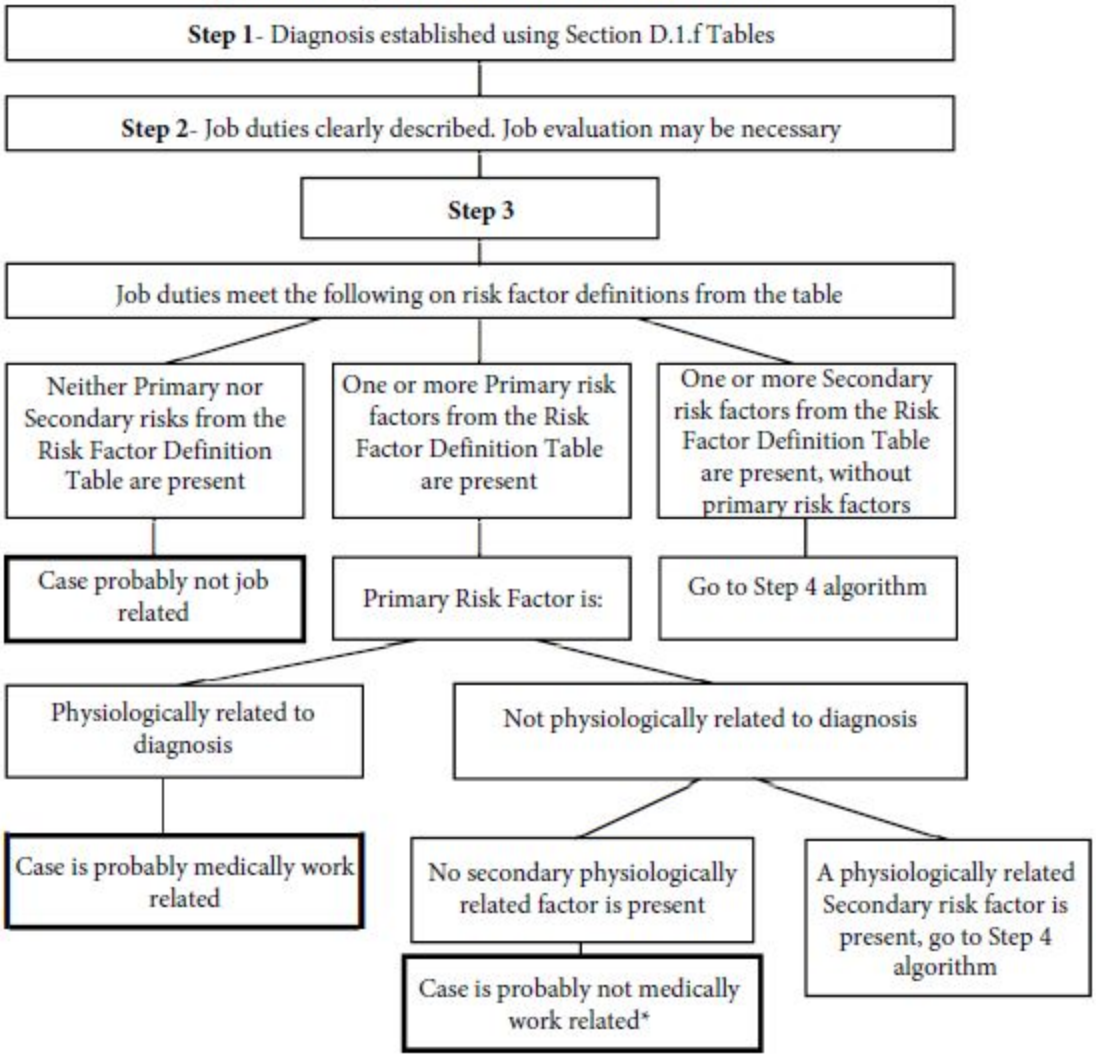
- Generally speaking, CTC ratings are produced by first establishing causality per the MTG and then rating the impairment per the *AMA Guides 3rd ed (rev.)*. However, if the level of impairment is not justly represented by rating systems established in the *Guides*, the clinician may rate the impairment using the Cumulative Trauma Staging Matrix when well justified in the narrative report. As with other conditions, Impairment Ratings for CTC are converted to the Whole Person level.
    - Ratings based on the Cumulative Trauma Staging Matrix are *preferred* over an impairment rating based on decreased grip strength.

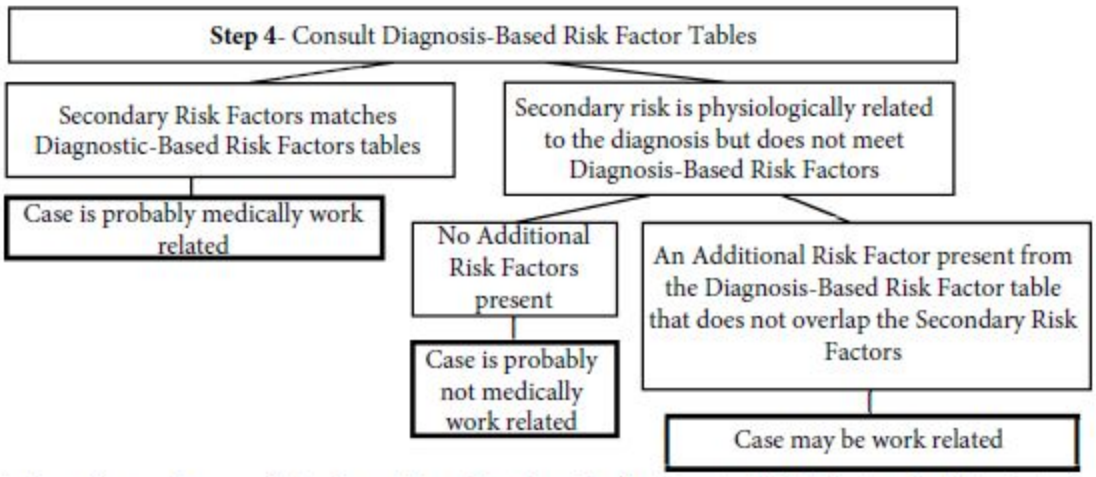
Begin by Establishing Causality

- This can be more challenging due to lack of obvious proximate cause.
- The Division developed the Algorithmic Steps for Medical Causation Assessment to help the provider determine work-relatedness .

***Note: Steps 1-4 apply to navigating the Algorithmic Steps for Medical Causation Assessment to determine causality of injury.*

Algorithmic Steps for Medical Causation Assessment





*In the case of an aggravation or exacerbation of a pre-existing condition, the provider will need to make and individualized causation decision based on the presence of other accompanying conditions

Step 1: Determine a specific **diagnosis** using the Physical Examinations Findings Reference Tables in the MTG.

- Diagnosis criteria is included in tables, including required findings to support the diagnosis.
    - Physical Examinations Findings Reference Table: Specific Musculoskeletal Diagnoses
    - Physical Examinations Findings Reference Table: Specific Peripheral Nerve Diagnoses
- If a diagnosis from the Physical Examinations Findings Reference Tables is not established and supported, the impairment should not be rated as a Cumulative Trauma Condition.

Note: Umbrella terms such as "cumulative trauma disorder", "repetitive motion syndrome", or "repetitive strain injury" are not acceptable diagnoses.

e. **Physical Examination Findings Reference Table: Specific Musculoskeletal Diagnoses**

DIAGNOSIS	SYMPTOMS	SIGNS (Required Findings)
Aggravated Osteoarthritis of the Wrist	Pain usually in the carpometacarpal joints; or in metacarpophalangeal joints.	At least one of the following: • Positive grind test resulting in pain; crepitus; • Subluxation of the metacarpal may be induced in advanced cases; • Swelling; • Reduced motion; • Angular deformities; • Tenderness with palpation of thumb metacarpophalangeal or carpometacarpal joint.
de Quervain's Disease	Tenderness over the first dorsal extensor compartment (anatomical snuff box).	At least one of the following: • Pain worsened by resisted thumb abduction and/or extension with or without resistance; • Positive Finkelstein's test.
Epicondylitis-Lateral (Epicondylalgia)	Elbow pain over the lateral epicondyle increased with gripping.	Tenderness to palpation at/near lateral epicondyle and pain over the lateral epicondyle and/or extensor mass of the forearm with one of the following maneuvers: • Active or resisted wrist extension; • Active or resisted middle finger extension; • Active or resisted supination.

DIAGNOSIS	SYMPTOMS	SIGNS (Required Findings)
Epicondylitis-Medial (Epicondylalgia)	Elbow pain over the medial epicondyle.	Tenderness to palpation at/near medial epicondyle and pain over the medial epicondyle and/or flexor mass of the forearm with one of the following maneuvers: • Active or resisted wrist flexion; • Active or resisted pronation.
Extensor Tendon Disorders of the Wrist	Pain localized to the affected tendon(s) worsened by wrist or finger extension.	Pain and/or tenderness with active or resisted wrist/digit extension, specific to the extensor mechanism involved.
Flexor Tendon Disorders of the Wrist	Pain/tenderness localized to affected tendons.	Reproduction of pain with active or resisted wrist/digit flexion or ulnar deviation specific to the flexor mechanism involved.
Triangular Fibrocartilage Complex Tear (TFCC)	Symptoms mainly on ulnar side of the wrist.	Tenderness over the TFCC complex and localized pain, clicking, or findings of abnormal motion with one of the following movements: • Forced supination and pronation with axial pressure on an ulnar deviated wrist; • The patient pushes up from a seating position using the hand, and/or • Ballottement of the distal ulna with the wrist supinated causes abnormal motion as compared to the asymptomatic side.

DIAGNOSIS	SYMPTOMS	SIGNS (Required Findings)
Trigger Finger	Difficulty flexing the finger with a catching or triggering sensation.	One of the following: • Tenderness at the A-1 pulley with finger flexion; • Triggering of the digit; • Difficulty flexing and extending the finger with a palpable nodule.

f. **Physical Examination Findings Reference Table: Specific Peripheral Nerve Diagnoses**

DIAGNOSIS	SYMPTOMS	SIGNS (Required Findings)
Carpal Tunnel Syndrome	Specific paresthesias in 2 of the following digits: thumb, index, and middle finger. Shaking of the hand (to relieve symptoms) and nocturnal symptoms are common.	At least one of the following: • Positive Phalen's sign; • Positive Tinel's sign over the carpal tunnel; • Positive closed fist test; • Positive compression test; • Thenar atrophy may be present later in course; • Weakness of abductor pollicis brevis; • Sensory loss to pinprick, light touch, two-point discrimination or Semmes-Weinstein monofilament tests in a median nerve distribution. No loss of sensation in the central palm.

DIAGNOSIS	SYMPTOMS	SIGNS (Required Findings)
Cubital Tunnel Syndrome	Paresthesias or dull, aching sensations in the 4th and 5th digits (ring and small fingers) and discomfort near the medial aspect of the elbow.	Paresthesias or dull, aching in the 4th and 5th digits and at least one of the following exam findings: • Diminished sensation of the fifth and ulnar half of the ring fingers, which may sometimes include sensory loss to pinprick, light touch, two-point discrimination or Semmes-Weinstein monofilament tests in an ulnar nerve distribution; • Positive elbow flexion/ulnar compression test; • Later stages manifested by: intrinsic atrophy and ulnar innervated intrinsic weakness; Wartenberg's sign; Froment's sign.
Guyon Canal (Tunnel) Syndrome	Paresthesias in the 4th and 5th digits (ring and small fingers) without proximal ulnar complaints.	At least one of the following exam findings: • Positive Tinel's at hook of hamate; • Numbness or paresthesias of the palm surface of the ring and small fingers; • Decreased strength of the adductor pollicis, abductor digiti minimi, and/or lumbricals.
Posterior Interosseous Nerve Entrapment (PIN)	Weakness of finger and thumb extension	Weakness or inability to extend fingers, thumb or wrist in neutral or ulnar deviation;
Pronator Syndrome	Pain/paresthesias in the median nerve distribution distal to the elbow.	Paresthesias in the median nerve distribution and at least one of the following reproduces median nerve symptoms:

DIAGNOSIS	SYMPTOMS	SIGNS (Required Findings)
Pronator Syndrome, continued		• Resisted pronation with elbow flexed at 90 degrees or elbow extended; • Positive Tinel's at the proximal edge of the pronator teres muscle over the median nerve.
Radial Tunnel Syndrome	Pain over the lateral posterior forearm. May occur in conjunction with and must be distinguished from lateral epicondylitis. May include paresthesias over the dorsal radial hand and wrist.	The following two elements are required: • Tenderness over the radial nerve near the proximal edge of the supinator muscle; • Resisted supination or resisted middle finger extension with the forearm pronated and extended reproduces symptoms.

Step 2: **Identify specific job duties**, utilizing a jobsite evaluation if necessary.

- A formal jobsite evaluation is strongly encouraged by the Division as ergonomic changes are likely to be involved in the treatment plan.

Step 3: Identify any risk factors present in job duties by referencing the **Risk Factor Definitions Table** in the MTG.

- Risk factors are defined as "Primary" or "Secondary".
    - Presence of primary risk factor(s) related to diagnosis suggests high likelihood of work-relatedness.
    - Absence of any related primary risk factors necessitates assessment of any secondary risk factors (proceed to Step 4).
    - Absence of both primary and secondary risk factors physiologically related to the diagnosis suggests the case is probably not work related.

d. Risk Factors Definitions Table

Category	As a Primary Risk Factor	Secondary Risk Factor
Force and Repetition/Duration	6 hrs. of: use of 2 pounds pinch force or 10 pounds hand force 3 times or more per minute.	3 hrs. of: use of 2 pounds pinch force or 10 pounds hand force 3 times or more per minute.
	6 hrs. of: lifting 10 lbs > 60x per hour.	3 hrs. of: lifting 10 lbs > 60x per hour.
	6 hrs. of: use of hand held tools weighing 2 lbs or greater.	3 hrs. of: use of hand held tools weighing 2 lbs or greater.
Awkward Posture and Repetition/Duration	4 hrs. of: Wrist flexion > 45 degrees, extension > 30 degrees, or ulnar deviation > 20 degrees.	
	6 hrs. of: Elbow - flexion > 90 degrees.	3 hrs. of: Elbow - flexion > 90 degrees.
	4 hrs. of: Supination/pronation with task cycles 30 seconds or less or posture is used for at least 50% of a task cycle.	3 hrs. of: Supination/pronation of 45° with power grip or lifting.
Category	**As a Primary Risk Factor**	**Secondary Risk Factor**
Computer Work	Note: Up to 7 hours per day at an ergonomically correct workstation is not a risk factor. Refer to Section H. 6.e Ergonomic Considerations Table for definition of ergonomic risk factors. > 4 hrs. of: Mouse use.	
Use of handheld vibratory power tools and Duration	6 hrs. for more common types of vibration exposure.	2 hrs. when accompanied by other risks.
Cold Working Environment		Ambient temperature of 45F or less for 4 hrs. or more, such as handling frozen foods that are 10 degrees. This risk factor does not stand alone. It is used in combination with other secondary risk factors. Refer to the following Diagnostic-Based Risk Factors Table.

Step 4 (if applicable): If no Primary Risk Factor is present (or physiologically related to the diagnosis), but a Secondary Risk Factor physiologically related to the diagnosis is present, then **consult the Diagnosis-Based Risk Factor Table** in the MTG. The table presents Diagnosis-Based Risk Factors based on the quality of supporting evidence available. The table also establishes “Non-Evidence-Based Additional Risk Factors” which may be considered as well.

- If the Secondary Risk Factors match the evidence-based Diagnosis-Based Risk Factors, then the case is probably work related.
- If the Secondary Risk Factors do not match the evidence-based Diagnosis-Based Risk Factors, then the case is probably not work related UNLESS there is an additional Diagnosis-Based Risk Factor, in which case it MAY be work related.

e. **Diagnosis-Based Risk Factors Table**

DIAGNOSIS-BASED RISK FACTORS

Hours are calculated by totaling the cumulative exposure time to the risk over an 8 hour day. Breaks or periods of inactivity or performing other types of work tasks are not included. Unless the hours are specifically stated below, "combination" of factors described below uses the Secondary Risk Factor Definitions from the Risk Factor Definition Table.

Diagnosis	Evidence FOR Specific Risk Factors			Evidence AGAINST Specific Risk Factors	Non-Evidence-Based Additional Risk Factors to Consider. These factors must be present for at least 4 hours of the work day, and may not overlap evidence risk factors.[1]
	Strong Multiple high quality studies	Good One high quality study or multiple adequate studies	Some One adequate study		
Aggravated Osteoarthritis of the Thumb, Carpometacarpal (CMC) and Wrist	No Quality Evidence Available				Work studies support repetitive thumb movement 20 times per minute in women contributing to CMC arthritis. Awkward Posture (depending on the joint involved). Repetition of activities affecting the joint involved for 4 hrs. Prior Injury.
Carpal Tunnel Syndrome		Combination of force, repetition, and vibration.[2,4]	Wrist bending or awkward posture for 4 hrs.		High repetition defined as task cycle times of less than 30 seconds or performing the same task for more than 50% of the total cycle time.[5]

Diagnosis	Evidence FOR Specific Risk Factors			Evidence AGAINST Specific Risk Factors	Non-Evidence-Based Additional Risk Factors to Consider. These factors must be present for at least 4 hours of the work day, and may not overlap evidence risk factors.[1]
	Strong Multiple high quality studies	Good One high quality study or multiple adequate studies	Some One adequate study		
Carpal Tunnel Syndrome, continued		Combination of repetition and force for 6 hours. Combination repetition and forceful tool use with awkward posture for 6 hours. Combination force, repetition, and awkward posture. Combination of 2 pound pinch or 10 pound hand force 3 times or more per minute for 3 hours.	Mouse use more than 4 hours. Combination cold and forceful repetition for 6 hours - Frozen food handling.	Good evidence - Keyboarding less than or equal to 7 hrs. in good ergonomic position IS NOT RELATED. Good evidence- Repetition alone less than or equal to 6 hrs. IS NOT RELATED.	Tasks using a hand grip. Extreme wrist radial/ulnar positions or elbows in awkward postures.
Cubital Tunnel Syndrome			Combination forceful tool use, repetition and probably posture for 6 hrs- Holding a tool in position with repetition.		Wrist bending and/or full elbow flexion/extension, repetition for 4 hours, vibration.[3] Repetitive pronation of forearm.[8] Sustained pressure at the cubital tunnel.

Diagnosis	Evidence FOR Specific Risk Factors			Evidence AGAINST Specific Risk Factors	Non-Evidence-Based Additional Risk Factors to Consider. These factors must be present for at least 4 hours of the work day, and may not overlap evidence risk factors.[1]
	Strong Multiple high quality studies	**Good** One high quality study or multiple adequate studies	**Some** One adequate study		
DeQuervain's Disease		Combination force, repetition, & posture.[2,4]			Wrist in ulnar deviation.[3] Repetitive thumb abduction and extension.[3] Wrist bending in extreme postures.[3] Precise hand motions e.g., dental hygienists. Repetitive hitting.
Epicondylitis Lateral		Combination – awkward posture (forearm supination past 45 degrees) and forceful lifting.[2] Combination force and possible awkward posture – study used repetition and turning and screwing. Combination forearm pronation 45° or greater with power grip or lifting for 3 hours per day.	Combination of wrist bending for 4 hours and rotation the forearm for 2 hours. Combination repetition and awkward posture including static posture.	Some evidence keyboard use IS NOT RELATED.	Wrist posture in extension and repetitive supination of the forearm and/or elbow extension.[3]

Diagnosis	Evidence FOR Specific Risk Factors			Evidence AGAINST Specific Risk Factors	Non-Evidence-Based Additional Risk Factors to Consider. These factors must be present for at least 4 hours of the work day, and may not overlap evidence risk factors.[1]
	Strong Multiple high quality studies	**Good** One high quality study or multiple adequate studies	**Some** One adequate study		
Epicondylitis Medial		Combination – force & repetition,[4] force and wrist and hand repetition.	Combination of wrist bending for 4 hours and rotation the forearm for 2 hours.	Some evidence keyboard use IS NOT RELATED.	Wrist posture in flex and repetitive pronation and/or elbow extension.[3]
Extensor tendon disorders of the Wrist		Combination - force & repetition,[4] force and wrist and hand repetition.[2] Combination - forceful exertion and repetition 6 hours. Combination force, repetition, & posture.[2, 4]			Sustained tool use. Awkward posture.[3] No relationship to keyboard use is expected in a good ergonomic workstation. Wrist bending in extreme postures.[3] Repetitive hitting.
Flexor tendon disorders of the Wrist		Combination force, repetition, & posture.[2, 4]			Sustained tool use. Awkward posture.[3] No relationship to keyboard use is expected in a good ergonomic workstation. Wrist bending in extreme postures.[3] Repetitive hitting.

Diagnosis	Evidence FOR Specific Risk Factors			Evidence AGAINST Specific Risk Factors	Non-Evidence-Based Additional Risk Factors to Consider. These factors must be present for at least 4 hours of the work day, and may not overlap evidence risk factors.[1]
	Strong Multiple high quality studies	Good One high quality study or multiple adequate studies	Some One adequate study		
Guyon Canal	No Quality Evidence Available.				Ulnar wrist posture and flexion. Direct pressure on the wrist.
Posterior Interroseous Nerve Entrapment	Refer to lateral epicondylitis section above for indirect evidence. No specific evidence available.				Ulnar wrist posture and flexion. Direct pressure on the wrist.
Pronator Syndrome	Refer to medial epicondylitis section above for indirect evidence. No specific evidence available.				Ulnar wrist posture and flexion. Direct pressure on the wrist.
Trigger Finger			Hand tool use – 6 hours.		Repeated digital flexion.
Radial Tunnel Syndrome			Repetition and force - force of 1 kg with cycle time < 1 minute or awkward posture (static posture) elbow > 90 degrees.		Repetitive Supination. Extension of the elbow from 0 to 45 degrees.

Diagnosis	Evidence FOR Specific Risk Factors			Evidence AGAINST Specific Risk Factors	Non-Evidence-Based Additional Risk Factors to Consider. These factors must be present for at least 4 hours of the work day, and may not overlap evidence risk factors.[1]
	Strong Multiple high quality studies	Good One high quality study or multiple adequate studies	Some One adequate study		
Triangular Fibrocartilage Compression	No Quality Evidence Available.				Usually from traumatic hyperextension which may become symptomatic over time. Wrist posture in extension and repetitive supination of the forearm and/or elbow extension. For occupational, usually unilateral with ulnar wrist pain while supinating and extending the wrist as part of the regular work duty.

1. Physiological risk factors are those generally agreed upon by the medical community to cause the specific condition described. Other risk factors described are those identified in lower quality studies that are possibly related. These are consensus risk factors.
2. Combined factors refer to the Secondary Risk Factor definitions found in the Risk Factor Definition Table.
3. Caution: These additional risk categories may not be used when awkward posture, using a similar definition, has been cited as a Secondary Risk Factor.
4. Evidence rated as strong by National Institute for Occupational Safety and Health (NIOSH) 1997 criteria are placed in the "good" category because the NIOSH strong evidence definition matches the Colorado "good" level of evidence requiring multiple adequate studies.
5. Due to small case size and a definition of low force/high repetition jobs that likely included many jobs qualifying for a force risk from the "Risk Definitions" table, this study does not support repetition as a sole risk factor.

Once Causality is Established, Impairment is Rated.

Step 5: Rate any impairments, such as ROM or neurological, in the appropriate manner as established in *AMA Guides 3rd Ed. (rev.).*

- If the patient has no impairment as per the *AMA Guides* or the impairment rating is grossly discrepant in comparison to the physician's clinical judgment of impairment based on the patient's functional deficits, the impairment rating may be determined using the **Cumulative Trauma Staging Matrix** in the MTG (also available in Division's "Tips").
    - Use of the Cumulative Trauma Staging Matrix should be well justified by the clinician in the narrative report.

Cumulative Trauma Staging Matrix

	Stage 1 (Minimal)	Stage 2 (Mild)	Stage 3 (Moderate)	Stage 4 (Severe)
History and Physical Examination	1 to 2 symptoms with signs identified on history and supported by physical examination with consistency of subjective and objective findings	2 or more symptoms with signs identified and supported by physical examination with consistency of subjective and objective findings	3 or more symptoms with signs identified and supported by the physical examination with consistency of subjective and objective findings	3 or more symptoms with signs identified and supported by physical examination with consistency of subjective and objective findings
	AND	**AND**	**AND**	**AND**
Response to Modification of Specific Aggravating Factors	Symptoms and/or signs improve or resolve with modification of specific aggravating activity	Symptoms and/ or signs may improve but will not resolve completely with modification of specific aggravating activity	Symptoms and/ or signs do not improve with modification of the specific aggravating activity but may improve with elimination of the specific aggravating activity	Symptoms and/ or signs do not improve with modification or elimination of the specific aggravating activity
	AND	**AND**	**AND**	**AND**
Activities of Daily Living (ADLs)	Minimal problems with ADLs	Noticeable aggravation by more difficult ADLs	Significant interference with most ADLs	Severe limitations of ADLs
Impairment Grades at MMI	**0-10%**	**11-20%**	**21-30%**	**31-40%**

Note: Steps 6-12 apply to cases in which the physician has elected to utilize the Cumulative Trauma Staging Matrix as a means of rating the patient's impairment.

Step 6: **Determine Stage of Impairment** based on History and Physical Examination findings, Response to Modification of Specific Aggravation Factors, and impact on Activities of Daily Living (ADL), with an emphasis on the impact on ADL.

Step 7: **Choose impairment grade percentage** from the range associated with selected Stage of Impairment.

Step 8: **Multiply** impairment grade from Step 6 by unit/joint impairment value in Table 17 (p. 48, *AMA Guides*).

Step 9: Record impairment rating value on the Upper Extremity worksheet under "Other Disorders" for the appropriate unit/joint/region.

Step 10: If there is an anatomic and physiologic basis to rate other joints in the same extremity, complete the rating in the manner described and **combine** the extremity ratings from distal to proximal.

Step 11: **Convert** the Upper Extremity impairment to *Whole Person Impairment* using the Upper Extremity worksheet and appropriate tables in *AMA Guides.*

Step 12 (if applicable): If a bilateral extremity impairment exists, they can only be combined at the Whole Person level.

References/Links:
CTC Medical Treatment Guideline
Upper Extremity Worksheet pt 1
Upper Extremity Worksheet pt 2
Impairment Rating Tips (Desk Aid 11)

Core Content: Ratings for cumulative trauma conditions based on the Cumulative Trauma Staging Matrix are reserved for cases in which no other rateable impairments exist per the *AMA Guides, 3rd Edition (rev)* to represent the patient's functional deficits and were therefore developed to reflect a patient's impairments in ADL performance.

Cumulative Trauma Conditions General Principles:

CTCs can be staged only after taking a thorough history and performing an appropriate physical examination (refer to History Taking and Physical Examination section of the MTG). The CTC rating system is to be used only for specific diagnoses when other rateable impairments are not present; the only exception being a decrease in grip strength. If a decrease in grip strength is present, it should not be rated in addition to the CTC as this would be considered "double dipping". The CTC rating system is *preferred* over an impairment rating based on grip strength. CTC ratings per the Cumulative Trauma Staging Matrix are calculated by determining a grade of impairment and then multiplying by the appropriate joint/segment value in Table 17 in *AMA Guides* (p. 48) before ultimately converting to the Whole Person Level.

Workshop Case:

History:

A 54-year-old left-hand dominant female complains of a 2-year history of left forearm pain. She has been employed for 10 years by the Hart Toy Company. The patient intermittently suffered various hand complaints over the years including tingling, pain, and clumsiness. She has seen several physicians in the past for pain in the left forearm and left-hand weakness.

The patient has experienced increasing pain over the past 2 years, but the symptoms rapidly worsened in the past 6 months. Her job requires picking up toys that weigh from 1-3 pounds with the left hand, gripping/pinching the object (2 pounds of force), while attaching parts with the right hand. She works on the "line" a minimum of 6 hours per day and finishes 3 toys per minute. The remainder of the day is spent on quality inspection.

Physical Examination:

- Palpation: marked tenderness at the left lateral epicondyle
- Special Tests:
    - (-) Tinel's at elbow (ulnar nerve) or at pronator tunnel (median nerve)
    - (-) Tinel's at wrist (median nerve)
    - (-) Phalen's test
    - (+) Resisted wrist extension and middle finger extension provocative test
- ROM elbow: normal
- Sensation: normal

Diagnosis: left lateral epicondylitis

Clinical Course: Patient was given a tennis elbow wrap and removed from the "line." A work site evaluation was ordered which resulted in ergonomic changes to the worksite (adjusting the height of the workspace to patient's stature and decreasing the horizontal reach distance to the line.) Equipment was added that would keep the toy in place while the part was attached, so the employee did not have to hold the toy. A steroid injection was performed along with physical therapy including iontophoresis, stretching, strengthening exercises and ultrasound.

Overall the patient improved but the elbow remained problematic. The patient was able to now perform 3 hours of assembly work per day separated by quality inspections. She was permanently restricted from any heavy lifting or repetitive lifting of 5 pounds or more.

The patient was offered surgery for lateral epicondylitis but declined. Patient was then found to be at MMI.

Present Symptoms: No numbness or tingling in hand. Pain at the left lateral epicondyle that limits her ability to work. No sleep disturbances, minimal impact with ADLs.

Physical Examination:

- ROM: wnl
- Sensation: wnl in hand
- Strength:
    - Grip: normal
    - Abduction of digits: 5/5
    - Wrist extension: 4/5 - recreates lateral epicondyle pain
    - Forearm pronation: 5/5
- Palpation: tenderness at lateral epicondyle and extending into forearm for short distance

Using the Cumulative Trauma Staging Matrix (next page) and the Upper Extremity Worksheet provided, calculate an impairment rating.

Cumulative Trauma Staging Matrix

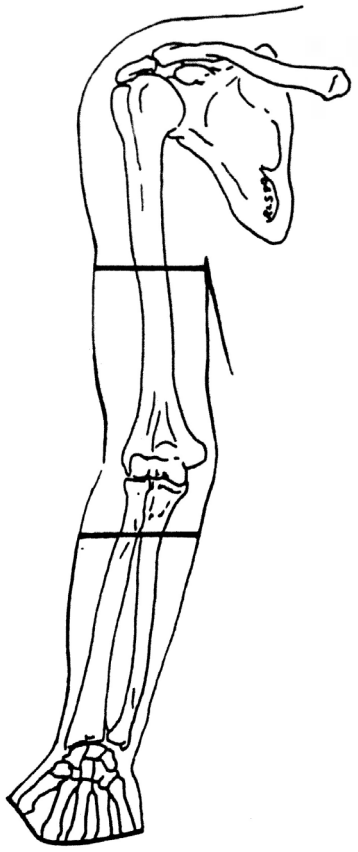
	Stage 1 (Minimal)	Stage 2 (Mild)	Stage 3 (Moderate)	Stage 4 (Severe)
History and Physical Examination	1 to 2 symptoms with signs identified on history and supported by physical examination with consistency of subjective and objective findings	2 or more symptoms with signs identified and supported by physical examination with consistency of subjective and objective findings	3 or more symptoms with signs identified and supported by the physical examination with consistency of subjective and objective findings	3 or more symptoms with signs identified and supported by physical examination with consistency of subjective and objective findings
	AND	**AND**	**AND**	**AND**
Response to Modification of Specific Aggravating Factors	Symptoms and/or signs improve or resolve with modification of specific aggravating activity	Symptoms and/or signs may improve but will not resolve completely with modification of specific aggravating activity	Symptoms and/or signs do not improve with modification of the specific aggravating activity but may improve with elimination of the specific aggravating activity	Symptoms and/or signs do not improve with modification or elimination of the specific aggravating activity
	AND	**AND**	**AND**	**AND**
Activities of Daily Living (ADLs)	Minimal problems with ADLs	Noticeable aggravation by more difficult ADLs	Significant interference with most ADLs	Severe limitations of ADLs
Impairment Grades at MMI	**0-10%**	**11-20%**	**21-30%**	**31-40%**

Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** _____ [1]				**IMP% =** _____ [2]		**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand _____% + Wrist _____% + Elbow _____% + Shoulder _____%)	=
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=

Total Upper Extremity Impairment (Combine I + II + III + IV + V)	=
Impairment of Whole Person (Use Table 3)	=

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Answer:

Elbow ROM measurements = 0% impairment

The diagnosis of lateral epicondylitis falls into the Cumulative Trauma Medical Treatment Guidelines diagnosis tables, with patient experiencing tenderness at the lateral epicondyle and pain with wrist extension and middle finger extension resisted testing.
This patient falls into the CTC Guideline primary risk category under the Risk Definitions Table. She picks up toys that weigh from 1-3 pounds with the left hand, gripping/pinching the object (2 pounds of force), at a rate of 6 hours per day and finishes 3 toys per minute.

- Under the Cumulative Trauma Staging Matrix: The patient falls into Stage 1: (0-10%), with **10%** chosen. (Minimal problems with ADLs, symptoms improved with modification of work activities, history and examination supports diagnosis)
- *AMA Guides* Table 17, p. 48 is used to identify the value of the joint, in this case, the elbow is **70%** upper extremity value
- 10% (Stage 1) x 70% (upper extremity value) = **7%** upper extremity impairment rating
- **Convert** 7% upper extremity to whole person using *AMA Guides* Table 3, p. 16 = **4%** whole person impairment

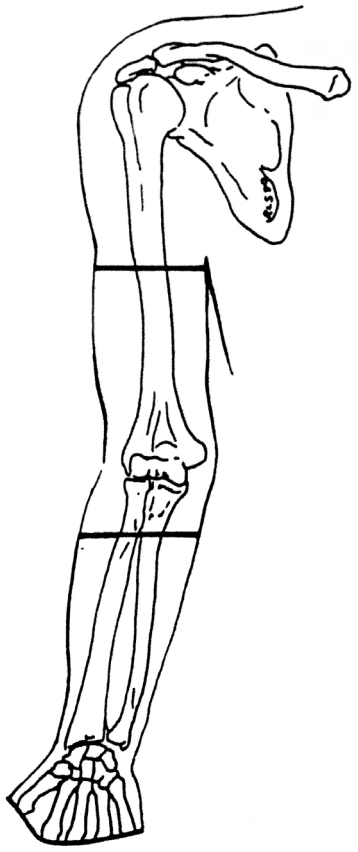
Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE R (L)

Name **Case Answer** Age ____ Sex M F Dominant Hand R L Date ____

Occupation ____ Diagnosis ____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** [1]				**IMP% =** [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** 0 [1]				**IMP% =** 7 [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** [1]				**IMP% =** [2]		**IMP%**

CTC: 10%x70%=7



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand ____% + Wrist ____% + Elbow 7 % + Shoulder ____%)	= 7
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=
Total Upper Extremity Impairment (Combine I + II + III + IV + V)	= 7
Impairment of Whole Person (Use Table 3)	= 4

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

Figure 1. Upper Extremity Impairment Evaluation Record–**Part 1 (Hand)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion						Amputation	Sensory Loss	Other Disorders	Hand Impairment %
Record Motion, Ankylosis and Impairment %						Mark Level & Impairment %	Mark Type, Level & Impairment %	List Type & Impairment %	• Combine Digit IMP% • Convert to Hand IMP%
			Flexion	Extension	ANK	IMP%				
THUMB	**IP**	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
				Motion	ANK	IMP%			
	CMC	RAD ABD	Angle°						
			IMP%						
		ADD	CMS						
			IMP%						
		OPP	CMS						
			IMP%						
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Add Impairment %			**CMC + MP + IP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
			Flexion	Extension	ANK	IMP%				
INDEX	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP=** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
MIDDLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
RING	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**
LITTLE	**DIP**	Angle°							
		IMP%							
	PIP	Angle°							
		IMP%							
	MP	Angle°							
		IMP%							
						[1]	[2]	[3]	[4]	**Hand Impairment %**
Combine Impairment %			**MP+PIP+DIP =** _____				**IMP% =** _____	**IMP% =** _____	**IMP% =** _____	• **Convert above**

Abnormal Motion	[1]
Amputation	[2]
Sensory Loss	[3]
Other Disorders	[4]
Digit Impairment % • Combine 1, 2, 3, 4	

Total Hand impairment (Add Hand Impairment % For Thumb + Index + Middle + Ring + Little Finger)	
Upper Extremity Impairment (**Convert Total Hand Impairment % To Upper Extremity Impairment %)	

Combined Values Chart; Use Table 1 (Digits to Hand); ** Use Table 2 (Hand To Upper Extremity)

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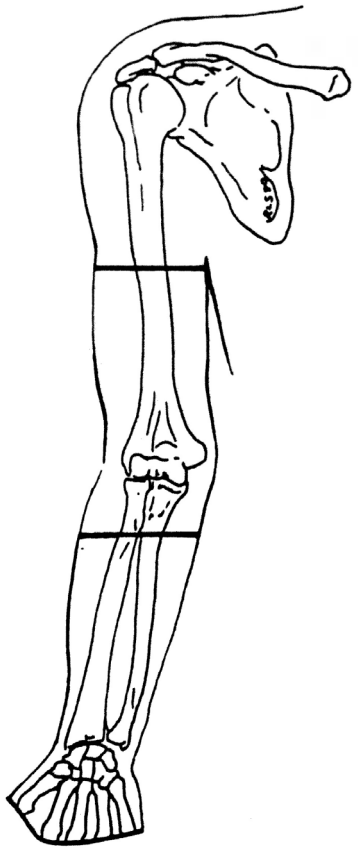
Upper Extremity Impairment Evaluation Record–**Part 2 (Wrist, Elbow & Shoulder)** SIDE ☐ R ☐ L

Name _____ Age _____ Sex ☐ M ☐ F Dominant Hand ☐ R ☐ L Date _____

Occupation _____ Diagnosis _____

Abnormal Motion					**Other Disorders**	**Regional Impairment**	**Amputation**
Record Motion, Ankylosis and Impairment %					List Type & Impairment %	Combine [1] + [2]	Mark Level & Impairment %
		Flexion	Extension	ANK	IMP%		
Wrist	Angle°						
	IMP%						
		RD	UD	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + RD/UD =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Elbow	Angle°						
	IMP%						
		PRO	SUP	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + PRO/SUP =** _____ [1]				**IMP% =** _____ [2]		
		Flexion	Extension	ANK	IMP%		
Shoulder	Angle°						
	IMP%						
		ADD	ABD	ANK	IMP%		
	Angle°						
	IMP%						
		INT ROT	EXT ROT	ANK	IMP%		
	Angle°						
	IMP%						
Add IMP%	**F/E + ADD/ABD + IR/ER =** _____ [1]				**IMP% =** _____ [2]		**IMP%**



I. Amputation Impairment (Other than Digits)	=
II. Regional Impairment of Upper Extremity (Combine Hand _____% + Wrist _____% + Elbow _____% + Shoulder _____%)	=
III. Peripheral Nervous System Impairment	=
IV. Peripheral Vascular System Impairment	=
V. Other Disorders (Not Included in Regional Impairment)	=

Total Upper Extremity Impairment (Combine I + II + III + IV + V)	=
Impairment of Whole Person (Use Table 3)	=

If Both Limbs are Involved: Calculate Whole Person Impairment for Each Upper Extremity on Two Separate Charts and *Combine* Using Combined Values Chart

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Measuring Spinal Range of Motion with Inclinometers

AMA Guides, 3rd Edition, revised, Chapter 3 (pp. 81-101)

Objectives:

1) Perform range of motion measurements for cervical, lumbar and thoracic spines in accordance with the *AMA Guides to Permanent Impairment, 3rd edition, revised.*
2) Determine validity of spinal range of motion measurements.
3) Utilize the appropriate tables of the *AMA Guides* to determine the spinal range of motion impairment.

References/Links

Cervical Range of Motion Worksheet (Figure 81)
Thoracic Range of Motion Worksheet (Figure 82)
Lumbar Range of Motion Worksheet (Figure 83)
Spine Impairment Summary Worksheet (Figure 84)
Impairment Rating Tips (Desk Aid 11)

Core Content

Evaluation of spinal impairment involves diagnosis-related factors, such as structural abnormalities (refer to Table 53, page 80), range of motion deficits, and neurologic factors. The technique for performing range of motion (ROM) measurements of the spine includes the use of dual inclinometers to assess deficits. Dual inclinometers are used because regional spinal motion is a compound motion, making it essential to measure the motion of the upper and lower extremes of the spinal region simultaneously.

General Guidelines:

- The patient should not have an aggravation of symptoms on the day of the appointment.
- It is recommended to have the patient stretch prior to taking measurements.
- Only **active** range of motion measurements may be obtained; do not assist the patient.
- Inclinometers straddle the specified landmarks for each region of the spine.
- **After** placing the inclinometers on the patient, zero them out.
- Do not zero out the inclinometers or take them off of the patient in between measurements.
    a. This includes when going from flexion to extension measurements or from left to right lateral flexion.
- Initially perform three measurements then check for validity of the resultant ROM values. If they are invalid, complete additional measurements until you have three consecutive internally valid ROM measurements, with a maximum of six measurements per visit. It is also acceptable to complete a total of six measurements and then check for validity. Validity will be discussed later in this chapter.

Keep in mind that impairment for ROM can only be assigned in the presence of a specific diagnosis impairment rating from Table 53 (refer to Spine and Pelvis Impairments). See Additional Information from the Division's Impairment Rating Tips section for more information.

Spinal ROM Validity: Per the *AMA Guides, 3rd edition revised*, all regional ROM values of the spine are subject to internal validity testing.

- Internal validity determines whether or not three consecutive measurements are within +/- 10% or 5 degrees of the median (middle) number. This should be applied to all net ROM values of the spine (cervical, thoracic and lumbar), as well as straight leg raising measurements when assessing the lumbar spine. If you are unable to obtain three consecutive measurements that are valid, it may indicate inconsistency with effort. Discussing this with the patient may help you obtain valid measurements.
    - The examiner must obtain at least three measurements for each motion.
    - If the three measurements are invalidated for any reason, three additional measurements must be obtained for a maximum of six measurements per visit.
    - If the six measurements are invalid or non-physiological, the patient must be brought back on another day to repeat up to 6 additional measurements.
    - If these additional measurements taken on a separate day are invalid, no impairment will be assigned for that particular movement.

See example below; the last 3 measurements are internally valid. Notice that internal validity only applies to the net ROM value for a particular movement (in this case, the true lumbar flexion angle), not the constituent ROM measurements.

Movement	Description	Range					
Lumbar Flexion	T12 ROM	48	46	48	48	54	
	Sacral ROM	8	6	2	2	10	
	True lumbar flexion angle	40°	40°	46	46	44	
	±10% or 5°?	Yes ☑	No ☐				
	Maximum true lumbar flexion angle	46					
	% impairment						

All illustrations are adapted from the *AMA Guides, 3rd Edition, revised*.

Cervical Range of Motion Measurements

- *Landmarks*

    - Occiput
    - T1 spinous process
        - C7 is usually the most prominent spinous process, T1 is found below C7 and does not move with cervical flexion and extension.
- *Positioning*:
    - Patient should be seated with good posture with head in a neutral position for flexion, extension, and lateral flexion measurements
    - Patient should be supine for rotation measurements.

<u>Cervical flexion:</u>

1. Zero out the inclinometers and have the patient maximally flex forward to obtain the measurements from the occiput and T1 landmarks.

2. Record the measurement from each of the landmarks on the Cervical Range of Motion Worksheet (Figure 81).
3. Do not zero out the inclinometers between measurements.
4. Subtract the T1 measurement from the occipital measurement to obtain the cervical flexion angle.
5. Repeat at least three measurements.
6. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain three additional measurements.
7. Record the maximum cervical flexion angle on the worksheet.

<u>Cervical Extension:</u>

1. Do not zero out the inclinometers from the cervical flexion measurement trials.

2. The T1 inclinometer can be moved slightly to the side in order to keep the inclinometers from contacting each other when the patient extends their neck.
3. Have the patient perform maximum extension to obtain measurements from the occiput and T1 landmarks.

4. Record the measurement from each of the landmarks on the Cervical Range of Motion Worksheet (Figure 81).
5. Do not zero out the inclinometers between measurements.
6. Subtract the T1 measurement from the occipital measurement to obtain the cervical extension angle.
7. Repeat at least three measurements.
8. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain three additional measurements.
9. Record the maximum cervical extension angle on the worksheet.

Cervical Lateral Flexion:

1. Lay the inclinometers flat against patient at the landmarks.
2. Zero out the inclinometers.
3. Have the patient laterally flex to the right to obtain measurements.

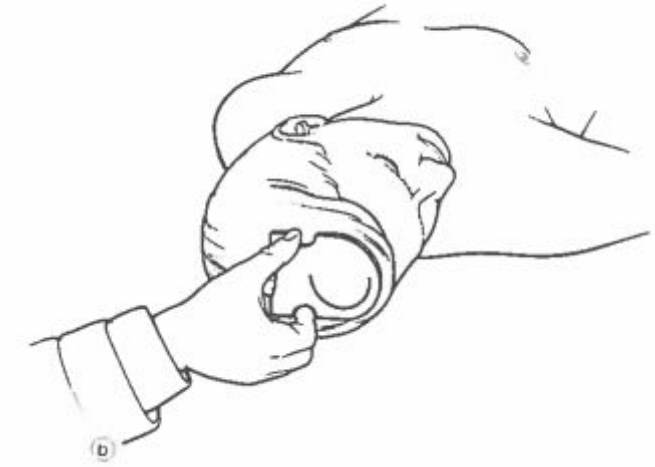
4. Record the measurement from each of the landmarks on the Cervical Range of Motion Worksheet (Figure 81).
5. Do not zero out the inclinometers between measurements.
6. Subtract the T1 measurement from the occipital measurement to obtain the cervical right lateral flexion angle.
7. Repeat at least three measurements.
8. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain three additional measurements.
9. Record the maximum cervical right lateral flexion angle on the worksheet.

Repeat the above steps for *left* lateral flexion angle measurements without zeroing out the inclinometers.

Cervical Rotation:

- *Landmark:*
    - Forehead or top of head
- *Positioning*:
    - Patient is positioned supine, instruct the patient how to rotate instead of “rolling” the head.

1. Use one inclinometer and place it on the forehead or top of head.
2. Zero out the inclinometer.
3. Have the patient rotate maximally to the right to obtain measurements.



4. Record the measurement on the Cervical Range of Motion Worksheet (Figure 81).
5. Do not zero out the inclinometers between measurements.
6. Repeat at least three measurements.
7. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain 3 additional measurements.
8. Record the maximum cervical right rotation angle on the worksheet.

Repeat the above steps for *left* cervical rotation measurements without zeroing out the inclinometers.

<u>Determining Cervical ROM Impairment using Figure 81 (Cervical Range of Motion Worksheet):</u>

1. If 3 consecutive measurements are deemed internally valid for a given movement, check the box indicating “yes” on the Cervical ROM worksheet for that movement.
2. Record the maximum angle from the 3 valid measurements for that movement.
3. Repeat Steps 1-2 for each of the 6 cervical movements. If a movement is deemed invalid after 2 visits and a total of 12 measurements, do not provide a rating for that movement.
4. Utilize the following tables in the *AMA Guides* to determine the ROM impairment for each cervical movement:
    a. Cervical Flexion/Extension: Table 55 (p. 88)
    b. Cervical Lateral Flexion: Table 56 (p. 90)
    c. Cervical Rotation: Table 57 (p. 90)
5. Calculate the Total Cervical ROM Impairment by adding all ROM impairments if no ankylosis is present.*
    - Cervical Flexion **+** Cervical Extension **+** Cervical Right Lateral Flexion **+** Cervical Left Lateral Flexion **+** Cervical Right Rotation **+** Cervical Left Rotation

    *If ankylosis is present, use largest ankylosis impairment value as Total Cervical ROM Impairment.

Additional Information from the Division’s Impairment Rating Tips:
In order to assign impairment for spine ROM assignment of a specific diagnosis from Table 53 must be present. However, in unusual cases with established severe shoulder pathology accompanied by treatment of the cervical musculature, an isolated cervical range of motion impairment may be allowed if it is justified by the clinician.

Lumbar ROM Validity: Per the *AMA Guides, 3rd edition revised*, ROM measurements of the lumbar spine are subject to two types of validity testing: internal validity and straight leg raise validity. **Straight leg raise validity only applies to lumbar *flexion* ROM**.

Lumbar Range of Motion Measurements

- *Landmarks:*
    - T12 spinous process
    - Sacrum (middle, just above or at the top of the cleft)
- *Positioning*:
    - Patient is standing straight.

Lumbar Flexion:

1. Place inclinometers over the landmarks.
2. Have the patient stand up straight and zero out the inclinometers.
3. Have the patient maximally flex the lumbar spine (without bending knees) to obtain measurements at each landmark.

4. Record the measurements on the Lumbar Range of Motion Worksheet (Figure 83).
5. Do not zero out the inclinometers between measurements.
6. Subtract the sacral range of motion value from the T12 value to obtain the true lumbar flexion angle.
7. Repeat at least three measurements.
8. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain 3 additional measurements.
9. Record the maximum true lumbar flexion angle on the worksheet.

Lumbar Extension:

1. Place inclinometers over the landmarks.
2. Have the patient stand up straight and zero out the inclinometers.
3. Have the patient maximally extend the lumbar spine (without bending knees) to obtain measurements at each landmark.

4. Record the measurements on the Lumbar Range of Motion Worksheet (Figure 83).
5. Do not zero out the inclinometers between measurements.
6. Subtract the sacral range of motion value from the T12 value to obtain the true lumbar extension angle.
7. Repeat at least three measurements.
8. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain 3 additional measurements.
9. Record the maximum true lumbar extension angle on the worksheet.

Straight Leg Raise

The following steps indicate the procedure for obtaining SLR measurements:

- *Landmarks:*
    - Distal tibia

- *Positioning*:
    - Patient lies supine with both legs extended.

1. Place inclinometer on the distal tibia.
2. Place the other hand on the opposite ASIS to monitor movement.
3. Have the patient perform **active** elevation of the leg with knee straight and foot relaxed, not dorsiflexed. Do not assist the patient in lifting the leg.

4. Record maximum value on the Lumbar Range of Motion Worksheet (Figure 83) under the appropriate extremity for Straight Leg Raising.
5. Repeat at least three measurements.
6. Repeat on opposite leg and record under the appropriate extremity for Straight Leg Raising on the Lumbar Range of Motion Worksheet.

Straight Leg Raise (SLR) Validity Check

The SLR validity check must be performed for all lumbar ROM impairment *ratings* in order to validate *lumbar flexion*. If lumbar flexion is invalid and repeat measurements are to be taken, the clinician should re-test:

- Straight leg raising,

- Lumbar flexion, and
- Lumbar extension.

If SLR is invalid after two separate days of taking 6 measurements, the lumbar flexion impairment is not included in the ROM impairment.

To assess SLR validity, follow Steps 1-6 at the bottom of Figure 83 (Lumbar ROM worksheet) shown below.

Straight-Leg Raise (SLR) Validity Test for Lumbar Flexion

1. Max SLR Right _____
   Max SLR Left _____
2. Tightest SLR _____ **(Select smallest number from Step 1)**
3. Sum of best **sacral** flexion and **sacral** extension measurements _____ (Selected from above).
   Use **Sacral ROM,** NOT true lumbar flexion/extension angles.
4. Tightest SLR **-** (Sacral flexion + Sacral extension)
   (Step 2) _____ - (Step 3) _____ = _____
5. If the above (#4) *is greater than 10 degrees, lumbar flexion is invalid*
6. **For final invalidation,** claimant must have 2 sets of 3 measurements on 2 separate dates (total of 12).
   - See Level II Accreditation Curriculum (ROM of Spine) (Impairment Rating Tips)
   - DOWC Website: www.colorado.gov/cdle/dwc

*Please note: If the tightest SLR ROM exceeds the sum of sacral flexion and extension by more than **10 degrees***, then lumbar flexion ROM is invalid. Negative values indicate validity as they are less than 10.*

- *An error occurs under straight leg raising on Figure 83, p. 84 of the *AMA Guides*. It should read “if the tightest SLR ROM exceeds the sum of sacral flexion and extension by more than 10 **degrees**, lumbar ROM is invalid.” The *AMA Guides* states 10% instead of 10 degrees.

For example: Please see the following completed lumbar ROM worksheet with appropriate calculations for determining straight leg raise validity.

Figure 83. Lumbar Range of Motion

Movement	Description	Range					
Lumbar Flexion	T12 ROM	85	84	80			
	Sacral ROM	48	47	45			
	True lumbar flexion angle	37	37	35			
	±10% or 5°?	Yes ☑	No ☐				
	Maximum true lumbar flexion angle	37					
	% impairment						
Lumbar Extension	T12 ROM	28	30	31			
	Sacral ROM	4	6	6			
	True lumbar extension angle	24	24	25			
	±10% or 5°?	Yes ☑	No ☐	(add Sacral flexion and extension ROM and compare to tightest Straight Leg Raising Angle)			
	Maximum true lumbar extension angle	25					
	% impairment						
Straight Leg Raising, Right	Right SLR	58	54	59			
	±10% or 5°?	Yes ☑	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Right	59					
Straight Leg Raising, Left	Left SLR	50	52	50			
	±10% or 5°?	Yes ☑	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Left	52					
Lumbar Right Lateral Flexion	T12 ROM	30	31	31			
	Sacral ROM	10	14	13			
	Lumbar right lat flexion angle	20	17	18			
	±10% or 5°?	Yes ☑	No ☐				
	Maximum lumbar right lat flexion angle	20					
	% Impairment						
Lumbar Left Lateral Flexion	T12 ROM	32	30	33			
	Sacral ROM	11	10	10			
	Lumbar left lat flexion angle	21	20	23			
	±10% or 5°?	Yes ☑	No ☐				
	Maximum lumbar left lat flexion angle	23					
	% Impairment						
Lumbar Ankylosis in Lateral Flexion	Position			(Excludes any impairement for abnormal flexion/extension motion)			
	% Impairment						
Total Lumbar Range of Motion Impairment (*add* all ROM impairments if no ankylosis: use ankylosis impairment value if ankylosis is present)							

Straight-Leg Raise (SLR) Validity Test for Lumbar Flexion

1. Max SLR Right **59**
   Max SLR Left **52**
2. Tightest SLR **52** **(Select smallest number from Step 1)**
3. Sum of best **sacral** flexion and **sacral** extension measurements **48+6=54** (Selected from above).
   Use **Sacral ROM**, NOT true lumbar flexion/extension angles.
4. Tightest SLR - (Sacral flexion + Sacral extension)
   (Step 2) **52** - (Step 3) **54** = **-2**
5. If the above (#4) *is greater than 10 degrees, lumbar flexion is invalid*
6. **For final invalidation,** claimant must have 2 sets of 3 measurements on 2 separate dates (total of 12).
   - See Level II Accreditation Curriculum (ROM of Spine) (Impairment Rating Tips)
   - DOWC Website: www.colorado.gov/cdle/dwc

Remember, the sum must be ≤ 10 degrees in order for lumbar flexion to be valid.

- *-2 is less than 10 degrees, so in this case **lumbar flexion is valid.***

Additional Information for Straight Leg Raise Check for Invalidation of Lumbar Flexion from the Division's Impairment Rating Tips

The SLR check applies to lumbar flexion only; if it is invalid, the patient must be given another visit to repeat the range of motion. If after 2 visits and 12 sets of straight leg raise measurements it is determined that lumbar flexion is invalid, the other range of motion impairments may be used to determine the overall range of motion impairment.

Lumbar Lateral Flexion:

1. Place inclinometers flat on the patient over the landmarks.
2. Have the patient stand up straight and zero out the inclinometers.
3. Have the patient maximally laterally flex the lumbar spine to the right (without bending knees, keeping both feet on the floor) to obtain measurements at each landmark.

4. Record the measurements on the Lumbar Range of Motion Worksheet (Figure 83).
5. Do not zero out the inclinometers between measurements.
6. Subtract the sacral range of motion value from the T12 value to obtain the lumbar right lateral flexion angle.
7. Repeat at least three measurements.
8. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain 3 additional measurements.
9. Record the maximum lumbar right lateral flexion angle on the worksheet.

Repeat the above steps for *left* lateral flexion measurements without zeroing out the inclinometers.

Determining Lumbar ROM Impairment using Figure 83 (Lumbar Range of Motion Worksheet):

1. If 3 consecutive measurements are deemed internally valid for a given movement, check the box indicating "yes" on the Lumbar ROM worksheet for that movement.
2. Record the maximum angle from the 3 valid measurements for that movement.
3. Repeat Steps 1-2 for each of the 4 lumbar movements and SLR. If a movement is deemed invalid after 2 visits and a total of 12 measurements, do not provide a rating for that movement.
4. Utilize the following tables in the *AMA Guides* to determine the ROM impairment for each lumbar movement:
    a. Lumbar Flexion/Extension: Table 60* (p. 98)
    b. Lumbar Lateral Flexion: Table 61 (p. 98)

**Properly Using AMA Guides Table 60 (p. 98)*

- ➢ Percent (%) Impairment is based on *both* the highest sacral flexion angle and the highest true lumbar flexion angle from the set of 3 valid lumbar flexion measurements.
- ➢ Identify highest sacral flexion angle from set of 3 valid measurements taken during lumbar flexion testing.
- ➢ **First**, select appropriate range in the first column of Table 60 based on highest Sacral (Hip) Flexion Angle identified.
- ➢ **Then**, compare maximum True Lumbar Flexion Angle from worksheet to the ranges in the corresponding section of the second column of Table 60.
- ➢ **Finally**, identify % Impairment of Whole Person value in the third column of Table 60 associated with appropriate True Lumbar Flexion Angle.
- ➢ **Example:** If the highest sacral (hip) flexion from the set of 3 valid lumbar flexion measurements is 33°, and the highest true lumbar flexion angle from the set of 3 valid lumbar flexion measurements is 37°, the appropriate impairment percentage would be 7% whole person.

Figure 83. Lumbar Range of Motion

Highest Sacral (Hip) ROM value

Movement	Description	Range					
Lumbar Flexion	T12 ROM	69	69	65			
	Sacral ROM	32	33	30			
	True lumbar flexion angle	37	36	35			
	±10% or 5°?	Yes ☑	No ☐				
	Maximum true lumbar flexion angle	37					
	% impairment						

Maximum true lumbar flexion angle

5. Record ROM impairment value in the "% Impairment" box for the respective movement.

6. Calculate the Total Lumbar ROM Impairment by **adding** all ROM impairments if no ankylosis is present.*

- Lumbar Flexion **+** Lumbar Extension **+** Lumbar Right Lateral Flexion **+** Lumbar Left Lateral Flexion

*If ankylosis is present, use ankylosis impairment value as Total Lumbar ROM Impairment.

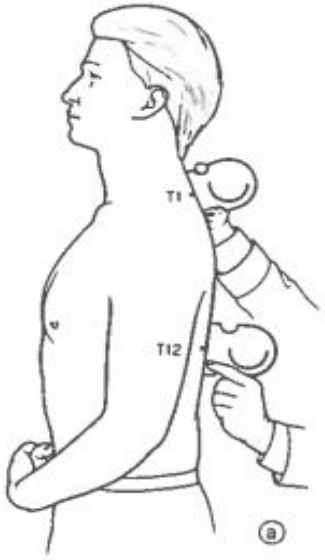
Keep in mind that impairment for ROM can only be assigned in the presence of a specific diagnosis impairment rating from Table 53. Refer to Spine and Pelvis Impairments.

<u>Thoracic Range of Motion Measurements</u>

- *Landmarks:*
  - T1 spinous process
  - T12 spinous process
- *Positioning*:
  - Patient should stand up straight (military brace position).

<u>Thoracic Angle of Minimum Kyphosis:</u> must be recorded on the worksheet in addition to thoracic flexion.

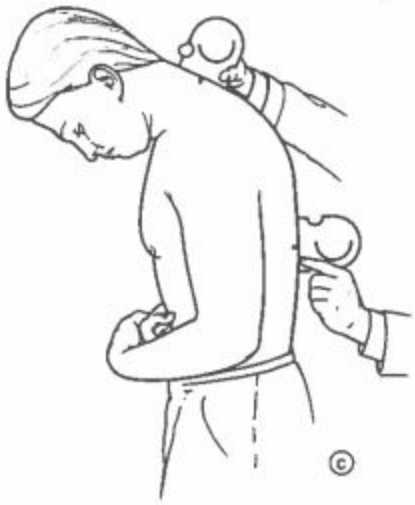
1. Place both inclinometers on the wall and zero them out.
2. With the patient standing, place the inclinometers (do not zero out again) over the landmarks.
3. Have them stand up straight (military brace position) and read the values on the inclinometers.



4. Record these values under “Angle of Minimum Kyphosis” on the Thoracic Range of Motion Worksheet (Figure 82).
   - Only one measurement is needed.
   - Subtract T12 value from T1 value to calculate Angle of Minimum Kyphosis and record on worksheet.

Thoracic Flexion:

1. Place inclinometers over the landmarks.
2. Zero out the inclinometers.
3. Have the patient maximally flex the trunk forward to obtain measurements at each landmark.



4. Record the measurements on the Thoracic Range of Motion Worksheet (Figure 82).
5. Do not zero out the inclinometers between measurements.
6. Subtract the T12 value from the T1 value to obtain the maximum thoracic flexion angle.
7. Repeat at least three measurements.
8. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain 3 additional measurements.
9. Record the maximum thoracic flexion angle on the worksheet.

Only the greater of the two impairments between thoracic angle of minimum kyphosis and thoracic flexion is used to calculate thoracic ROM impairment; do not use both impairments.

Thoracic Rotation: Patient is standing (preferred) with trunk flexed (holding onto a chair for support if needed) *or* seated with trunk flexed and arms crossed at the chest.

1. Place inclinometers over the landmarks.
2. Zero out the inclinometers.
3. Have the patient maximally rotate the trunk to the right to obtain measurements at each landmark.

4. Record the measurements on the Thoracic Range of Motion Worksheet (Figure 82).
5. Do not zero out the inclinometers between measurements.
6. Subtract the T12 value from the T1 value to obtain the maximum thoracic right rotation angle.
7. Repeat at least three measurements.
8. Determine if three consecutive measurements meet the internal validity criteria. If yes, mark the appropriate box on the worksheet. If not, repeat the steps above to obtain 3 additional measurements.
9. Record the maximum thoracic right rotation angle on the worksheet.

Repeat the above steps for *left* thoracic rotation measurements without zeroing out the inclinometers.

Determining Thoracic ROM Impairment using Figure 82 (Thoracic Range of Motion Worksheet):

1. If 3 consecutive measurements are deemed internally valid for a given movement, check the box indicating "yes" on the Thoracic ROM worksheet for that movement. *Note: This does not apply to the Angle of Minimum Kyphosis as only one measurement is required.*
2. Record the maximum angle from the 3 valid measurements for that movement.
3. Repeat Steps 1-2 for each of the 3 thoracic movements. If a movement is deemed invalid after 2 visits and a total of 12 measurements, do not provide a rating for that movement.
4. Utilize the following tables in the *AMA Guides* to determine the ROM impairment for each thoracic movement:
    a. Thoracic Flexion: Table 58 (p. 96)
    b. Thoracic Ankylosis: Table 58 (p. 96, bottom portion of table)
    c. Thoracic Rotation: Table 59 (p. 96)
5. Calculate the Total Thoracic ROM Impairment by adding all ROM impairments if no ankylosis is present.*
    - Thoracic Flexion **or** % impairment due to thoracic ankylosis (in extension) **+** Thoracic Right Rotation **+** Thoracic Left Rotation

    *If ankylosis is present, use larger ankylosis impairment value as Total Thoracic ROM Impairment.

Important Concepts:

ROM impairments of the spine are added within the same area of the spine.

Total ROM impairment is combined (Combined Values Chart, *AMA Guides* p. 254) with specific disorders from *AMA Guides* Table 53. *ROM cannot be rated without a corresponding Table 53 diagnostic impairment greater than 0%.**

If another provider's measurements are used (including a physical therapist), make sure they comply with the *AMA Guides, 3rd edition revised* utilizing dual inclinometry to obtain the measurements.

The Spine Impairment Summary Sheet (Figure 84) must be completed if assigning impairment for the spine.

**The Division's Impairment Rating Tips allows for cervical spine ROM impairment rating without a corresponding Table 53 diagnosis in cases with established severe shoulder pathology accompanied by treatment of the cervical musculature if well justified by the clinician.*

Figure 81. Cervical Range of Motion

Movement	Description	Range					
Cervical Flexion	Occipital ROM						
	T1 ROM						
	Cervical flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical flexion angle						
	% Impairment						
Cervical Extension	Occipital ROM						
	T1 ROM						
	Cervical extension angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical extension angle						
	% Impairment						
Cervical Ankylosis in Flexion/Extension	Position			(Excludes any impairment for			
	% Impairment			abnormal flexion/extension motion)			
Cervical Right Lateral Flexion	Occipital ROM						
	T1 ROM						
	Cervical right lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical right lat flexion angle						
	% Impairment						
Cervical Left Lateral Flexion	Occipital ROM						
	T1 ROM						
	Cervical left lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical left lat flexion angle						
	% Impairment						
Cervical Ankylosis in Lateral Flexion	Position			(Excludes any impairment for			
	% Impairment			abnormal flexion/extension motion)			
Cervical Right Rotation	Cervical right rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical right rotation angle						
	% Impairment						
Cervical Left Rotation	Cervical left rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical left rotation angle						
	% Impairment						
Cervical Ankylosis in Rotation	Position			(Excludes any impairment for			
	% Impairment			abnormal flexion/extension motion)			
Total Cervical Range of Motion Impairment (*add* all ROM impairments if no ankylosis; use largest ankylosis impairment value if ankylosis is present)		_____%					

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Figure 83. Lumbar Range of Motion

Movement	Description	Range					
Lumbar Flexion	T12 ROM						
	Sacral ROM						
	True lumbar flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum true lumbar flexion angle						
	% impairment						
Lumbar Extension	T12 ROM						
	Sacral ROM						
	True lumbar extension angle						
	±10% or 5°?	Yes ☐	No ☐	(add Sacral flexion and extension ROM and compare to tightest Straight Leg Raising Angle)			
	Maximum true lumbar extension angle						
	% impairment						
Straight Leg Raising, Right	Right SLR						
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Right						
Straight Leg Raising, Left	Left SLR						
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Left						
Lumbar Right Lateral Flexion	T12 ROM						
	Sacral ROM						
	Lumbar right lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar right lat flexion angle						
	% Impairment						
Lumbar Left Lateral Flexion	T12 ROM						
	Sacral ROM						
	Lumbar left lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar left lat flexion angle						
	% Impairment						
Lumbar Ankylosis in Lateral Flexion	Position			(Excludes any impairement for abnormal flexion/extension motion)			
	% Impairment						
Total Lumbar Range of Motion Impairment (*add* all ROM impairments if no ankylosis: use ankylosis impairment value if ankylosis is present)							

Straight-Leg Raise (SLR) Validity Test for Lumbar Flexion

1. Max SLR Right _____
   Max SLR Left _____
2. Tightest SLR _____ **(Select smallest number from Step 1)**
3. Sum of best **sacral** flexion and **sacral** extension measurements _____ (Selected from above). Use **Sacral ROM,** NOT true lumbar flexion/extension angles.
4. Tightest SLR - (Sacral flexion + Sacral extension)
   (Step 2) _____ - (Step 3) _____ = _____
5. If the above (#4) *is greater than 10 degrees, lumbar flexion is invalid*
6. **For final invalidation,** claimant must have 2 sets of 3 measurements on 2 separate dates (total of 12).
   - See Level II Accreditation Curriculum (ROM of Spine) (Impairment Rating Tips)
   - DOWC Website: www.colorado.gov/cdle/dwc

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Figure 82. Thoracic Range of Motion

Movement	Description	Range					
Angle of Minimum Kyphosis (Thoracic Ankylosis in Extension)	T1 reading		xxxx	xxxx	xxxx	xxxx	xxxx
	T12 reading		xxxx	xxxx	xxxx	xxxx	xxxx
	Angle of minimum kyphosis		xxxx	xxxx	xxxx	xxxx	xxxx
	% Impairment due to thoracic ankylosis	(Use larger of either ankylosis or flexion impairment)					
Thoracic Flexion	T1 ROM						
	T12 ROM						
	Thoracic flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum thoracic flexion angle						
	% Impairment						
Thoracic Right Rotation	T1 ROM						
	T12 ROM						
	Thoracic right rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum thoracic right rotation angle						
	% Impairment						
Thoracic Left Rotation	T1 ROM						
	T12 ROM						
	Thoracic left rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum thoracic left rotation angle						
	% Impairment						
Thoracic Ankylosis in Rotation	Position	_____					
	% Impairment	(Excludes any impairment for abnormal flexion/extension motion)					
Total Thoracic Range of Motion Impairment (add all ROM impairments if no ankylosis is present; use larger ankylosis impairment value if ankylosis is present)		_____%					

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Figure 84. Spine Impairment Summary

Impairment	Cervical	Thoracic	Lumbar
1. Due to Specific Disorders (Table 53 or Table 54)			
2. Range of Motion			
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength			
4. Other–From Sec. 3.4 p. 101			
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)			
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)			

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	% Impairment	*Guides* Page No.
a.		
b.		
c.		
d.		
e.		

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

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Figure 84. Spine Impairment Summary

Impairment	Current			Prior	Apportioned
	Cervical	**Thoracic**	**Lumbar**		
1. Due to Specific Disorders (Table 53 or Table 54)					
2. Range of Motion					
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength					
4. Other–From Sec. 3.4 p. 101					
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)					
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)					

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	Guides Page No.	Current Impairment	Prior	Apportioned
a.				
b.				
c.				
d.				
e.				

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

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Spine and Pelvis Impairment Ratings

AMA Guides, 3rd Edition, revised, Chapter 3 (p. 78)

Objectives:

1) Utilize *AMA Guides* Table 53 to determine impairment for specific clinical diagnoses.
2) Apply information from the Spine Range of Motion Worksheets to the Spine Impairment Summary Worksheet.
3) Determine spinal nerve root impairment accurately using a specific case scenario.
4) Correctly determine pelvic impairment in a case scenario.

Summary/Steps for Determining Spinal Impairment Rating

1) Determine the primary injured region (cervical, thoracic, or lumbar).
2) Determine diagnosis-related whole person impairment using *AMA Guides* Table 53 (p. 80). *Only the primary diagnosis should be considered.*
    a) If the patient does not meet standards for a diagnosis as defined in Table 53, then no range of motion (ROM) impairment rating can be assigned.
3) Obtain regional ROM measurements to determine whole person impairment due to loss of motion/ankylosis.
    a) Document measurements on the appropriate forms from the *AMA Guides*:
        i) Figure 81 (p. 82), Cervical ROM
        ii) Figure 82 (p. 83), Thoracic ROM
        iii) Figure 83 (p. 84), Lumbar ROM
        iv) Figure 84 (p. 85), Spine Impairment Summary Worksheet
    b) Use mandatory internal validity checks.
        i) For lumbar ROM, straight leg raise validity check is also required. Refer to Measuring Spinal ROM with Inclinometers section.
4) Determine additional extremity impairments due to radiculopathy and convert these impairments to whole person.
5) **Combine** the Table 53 diagnosis-related impairment, ROM/ankylosis-based impairment, and nerve impairments in whole person using the Combined Values Chart (*AMA Guides* p. 254). Document in *AMA Guides* Figure 84 (p. 85).
6) Repeat steps 1-5 for secondarily impaired spinal regions when appropriate.
7) **Combine** total whole person spine impairments for all involved spinal regions using the Combined Values Chart (*AMA Guides* p. 254).
8) **Combine total** spine whole person impairment with any other whole person impairment to arrive at a final whole person impairment.
9) If apportionment is appropriate, use the decision-making algorithm in the apportionment section. If the patient meets the standards for a previous injury rating as defined in *AMA Guides* Table 53, but no previous injury ROM measurements were taken, complete the Evaluation of Previous Spinal ROM Impairment worksheet (Desk Aid 10).

Summary/Steps for Determining Pelvis Impairment Rating

1) Fractures of the pelvis are rated under *AMA Guides* Chapter 3 (p. 101) with a whole person rating. Isolated SI joint dysfunction is rated using *AMA Guides* Table 53 and ROM.

Worksheets

Cervical Range of Motion Worksheet: *AMA Guides* Figure 81
Thoracic Range of Motion Worksheet: *AMA Guides* Figure 82
Lumbar Range of Motion Worksheet: *AMA Guides* Figure 83
Spine Impairment Summary Worksheet: *AMA Guides* Figure 84
Evaluation of Previous Spinal ROM Impairment Worksheet: Desk Aid #10
Apportionment Calculation Worksheet: Desk Aid #14

Core Content: All impairment ratings are based on the established diagnosis and are directly correlated to the primary diagnosis. In this chapter, Table 53 (Impairments Due to Disorders of the Spine) and range of motion are used to determine spine impairment ratings. If neurological issues are present, they will also be included when calculating the final whole person spine impairment rating.

Spine Impairment General Principles: In a workers' compensation case, a complete physical examination is expected, which is similar to general medical evaluations. The following are essential elements of the spine examination that should be included in the report:

- Inspection
- Palpation
- Range of Motion Testing - including measured *active* ROM straight leg raise for validity testing
- Sensation
- Muscle Strength
- Reflexes
- Provocative maneuvers to elicit radicular signs such as clinical straight leg raise for lumbar radicular symptoms.

Additional elements that must be reviewed and commented on include: chief complaint, history of present illness, past medical history, review of systems, family history and social history, psychometric testing when appropriate, functional activity level and occupational activities. Because impairment is meant to represent the patient's ability to perform activities of daily living, the functional status of the patient and return-to-work status should be discussed in the report.

The impairment rating must be performed when the patient does not have an acute illness or acute spasm as it should represent the patient as they function the majority of the time.

Use *AMA Guides* Table 53 (p. 80) to determine if the patient qualifies for a spinal impairment. According to *AMA Guides* Table 53, the lowest level to qualify for impairment is 6 months of treatment for medically documented pain and rigidity. There is currently not an accepted definition for rigidity, thus the main criterion is 6 months or more of treatment for documented pain. Only the primary diagnosis related to the work injury should be considered for rating on *AMA Guides* Table 53, which is in whole-person units.

Whenever 6 months of treatment of the spine has occurred and an *AMA Guides* Table 53 zero percent rating (or no Table 53 rating) is assigned, the physician must provide justification for the zero percent rating based on the lack of physiologic findings. The rating physician shall be aware that a zero percent rating in this circumstance implies that treatment was performed in the absence of medically documented pain and rigidity.

If an *AMA Guides* Table 53 rating greater than zero is used, spinal range of motion must be completed and combined with the rating. Range of motion can only be applied if an *AMA Guides* Table 53 rating is above zero.

Diagnosis of the Spine: The medical record should clearly state the diagnoses being rated. Only the primary diagnosis in a given region can be considered for rating.

> *For example*, if a patient sustained an L2 fracture, but had pain in the thoracic spine associated with the fracture, he should not receive ratings for the thoracic portions of the spine since the lumbar area was the site of the primary injury and the thoracic pain was secondary to the primary injury. On the other hand, if the patient fractured a cervical vertebrae and L2 then he would receive ratings for both the cervical and lumbar areas. In this case, an impairment rating may also be provided if justification is in the medical report.

AMA Guides Table 53 (p. 80) gives ratings for fractures, intervertebral discs, soft tissue lesions, spondylolysis, and spondylolisthesis as well as spinal stenosis.

AMA Guides Table 54 (p. 86) (Ankylosis Determined by Radiographic Methods) is rarely used in the workers' compensation system. It cannot be used in addition to *AMA Guides* Table 53, but may be used instead of Table 53, if ankylosis is determined by radiography. *AMA Guides* Table 54 cannot be combined with range of motion.

***AMA Guides* Table 53 (p. 80)**: As with all Tables in the *Guides*, it is important to note whether adding or combining is used to calculate impairment. Please be sure to read all Table footnotes as well.

I. Fractures
- Vertebral body compression fractures - Should be **combined** if multiple levels are fractured.
- Posterior element fractures - Should be **combined** if multiple levels are involved.
- Dislocations - Should be **combined** if multiple levels are involved.

II. Intervertebral disc or other soft tissue lesions: **choose the highest level of A-E**

A. Unoperated, with no residual signs or symptoms

B. Unoperated, with medically documented injury and a minimum of six months of medically documented pain and rigidity with or without muscle spasm, associated with *none to minimal* degenerative changes on structural tests.

C. Unoperated, with medically documented pain and rigidity with or without muscle spasm, associated with *moderate to severe* degenerative changes on structural tests; includes unoperated herniated nucleus pulposus with or without radiculopathy

D. Surgically treated disc lesion with no residual signs or symptoms

E. Surgically treated disc lesion with residual, medically documented pain and rigidity with or without muscle spasm

F. Multiple levels, with or without operations and with or without residual signs or symptoms: **add** on to B-E

G. Multiple operations with or without residual symptoms: **add** on to D or E

1. Second operation
2. Third or subsequent operation

III. Spondylolysis and spondylolisthesis, unoperated
- Grades I and II - note requirements outlined in *AMA Guides* Table 53
- Grades III and IV - note requirements outlined in *AMA Guides* Table 53

IV. Spinal stenosis, segmental instability, or spondylolisthesis, operated

A. Single level operation *without* residual signs or symptoms: choose A or B

B. Single operation *with* residual signs or symptoms

C. Multiple levels, operated, with residual, medically documented pain and rigidity with or without muscle spasm: **add** on to A-B

D. Multiple operations with residual, medically documented pain and rigidity with or without muscle spasm: **add** on to A-B

1. Second operation
2. Third or subsequent operation

Additional information on Spine Impairment from the Division's Impairment Rating Tips:

- The following procedures are considered surgical and should be rated under *AMA Guides* Table 53 II (D) or II (E):
    - Intradiscal electrothermal annuloplasty (IDEA)
    - Coblation of the nucleus pulposus
    - Microdiscectomy
    - Permanent spinal stimulator placement requiring laminotomy vertebroplasty or kyphoplasty
    - Artificial disc replacement
- Procedures for removal of spinal hardware are rated under *AMA Guides* Table 53 II (G) 1 or 2
- Rhizotomy (Radiofrequency Medial Branch Neurotomy or RF Neurotomy)
    - Not considered a surgical procedure under *AMA Guides* Table 53
    - *Two level* bilateral or unilateral rhizotomy is rated using *AMA Guides* Table 53 II (C)
    - *Three or four level* rhizotomies receive an *AMA Guides* Table 53 II (C) plus II (F) for the additional level.
- The following procedures are NOT rated as surgical procedures using *AMA Guides* Table 53:
    - Diagnostic or therapeutic spinal injections
    - Intrathecal drug pumps
    - Removal of spinal stimulator not requiring laminotomy

  Case Example: A construction worker suffered a herniated lumbar disc at work and has been treated beyond 6 months, without surgery. What *AMA Guides* Table 53 rating would you give him?
  Answer: Table 53 II C

Range of Motion: Spine range of motion measurements are performed using the inclinometer method as described in the *AMA Guides* and will be reviewed in the inclinometer workshop. Utilize the appropriate worksheets below from the *AMA Guides*, for documenting range of motion:

i) Figure 81 (p. 82), Cervical ROM
ii) Figure 82 (p. 83), Thoracic ROM
iii) Figure 83 (p. 84), Lumbar ROM
iv) Figure 84 (p. 85), Spine Impairment Summary Worksheet

ROM Tables in the *AMA Guides*:

Spine/motion	**Table #**	**Page #**
Cervical Flexion/Extension	55	88
Cervical Lateral Flexion	56	90
Cervical Rotation	57	90
Thoracic Flexion/Extension	58	96
Thoracic Rotation	59	96
Lumbar Flexion/Extension	60	98
Lumbar Lateral Flexion	61	98

Ankylosis measurements.
Ankylosis is defined as a complete absence of motion and an inability to achieve the neutral position of motion in a given plane. It is rarely present in spinal injuries.

Additional information on Spine Impairment Range of Motion from the Division's Impairment Rating Tips:

- If severe shoulder pathology exists with treatment of the cervical musculature, an isolated cervical range of motion impairment may be allowed if well-justified.

- Angle of minimum kyphosis MUST be recorded on the thoracic ROM worksheet, in addition to the other measurements. The greater of the two impairments (thoracic flexion and angle of minimum kyphosis) is used in rating thoracic ROM. Refer to the inclinometry section for details.

Neurological Findings Associated with Spine Impairment: These findings are typically radicular and are usually provided in extremity units. See the **Nervous System** section for instructions for rating neurological impairments.

Convert all nervous system impairment ratings into *whole person ratings* before **combining** with *AMA Guides* Table 53 impairment and range of motion impairments.

- *For Example:* If the rating for an L5 nerve root impairment for both the sensory and motor components is 4%, convert the 4% lower extremity rating to whole person using *AMA Guides* Table 46 (p. 72) which equals 2% whole person.
  The nerve rating of 2% whole person can be **combined** with the total spine rating from Table 53 (diagnosis related rating) and ROM to determine the final whole person rating.

If a nerve root injury exists that affects extremity range of motion and motor strength do NOT rate both (unless they are independent processes) as this would be “double dipping.” i.e.: rating both ankle ROM restriction and motor strength of the ankle dorsiflexors due to a nerve root injury would be considered “double dipping.”

When both sensory and motor impairments are present, **combine** them at the extremity level using the Combined Values Chart (*AMA Guides* p. 254).

Converting/Combining:

- Convert the total nerve specific extremity impairment to whole person using *AMA Guides* Table 3 (p. 16) for the upper extremity or *AMA Guides* Table 46 (p. 72) for the lower extremity.
- **Combine** this value (Combined Values Chart, *AMA Guides* p. 254) with the related spinal whole person impairment rating for the final rating.

Note: When neurological ratings are present in two extremities you cannot combine the ratings at the extremity level. They must instead both be converted to whole person and then **combined.**

Case Example: A construction worker with a herniated lumbar disc suffered permanent sensation loss in the right L5 nerve root distribution. What are the steps required to rate the nerve?

Answer:
1) Rate the L5 nerve root sensation deficit using AMA Guides Tables 49 (p. 76) and 10 (p. 42)
2) The impairment rating will be in lower extremity terms. Convert to whole person using AMA Guides Table 46 (p. 72)
*3) **Combine** the rating with the AMA Guides Table 53 impairment and ROM impairment*

Pelvis Impairment: Use *AMA Guides* Chapter 3 (p. 101) to rate healed fractures with and without displacement, deformity, and residuals, which are given as a whole person rating.

Range of motion is not included when rating the pelvis using the chart on *AMA Guides* page 101.

Do not use this for SI joint dysfunction as these are rated with AMA Guides Table 53 and ROM.

Additional information for Pelvis Impairment from the Division's Impairment Rating Tips: Rating for SI Joint Dysfunction: must qualify under the "six months of medically documented pain and rigidity with or without muscle spasm" for an *AMA Guides* Table 53 II (B) impairment rating. Appropriate ROM impairment must be **combined** with this.

> *Case Example:* An injured worker suffered a coccyx fracture when slipping and landing directly on her tailbone. She was eventually placed at MMI, but still had difficulty sitting for more than 15 minutes. The x-ray revealed nonunion of the coccyx. What rating would you give her?
>
> > *Answer:*
> > *According to the chart on AMA Guides page 101, #3 g: healed fracture with displacement or deformity and residuals, coccyx (nonunion or excision) = **5%** impairment*

Pitfalls

Determine the total whole person impairment rating for each area of the spine and then **combine** the values of each area.

Figure 84 must be attached with spinal impairment worksheets for final rating.

Exclusions/Omissions in the *AMA Guides*: The following Tables or parts within the Tables are for information only and are not used to perform any ratings. It is preferable to cross them out to avoid confusion.

- Figure 92 (p. 97): omit
- Table 56 and 57 (p. 90): cross out "Degrees of Cervical Motion Lost and Retained"
- Table 58 and 59 (p. 96): cross out "Degrees of Thoracic Motion Lost and Retained"
- Table 60 (p. 98): cross out "Degrees of Lumbosacral Motion Lost and Retained" under the True Lumbar Extension From Neutral Position section
- Table 61(p. 98): cross out "Degrees of Lumbosacral Motion Lost and Retained"

Workshop Case Example

J.C. is a 39-year-old truck driver from Greeley, Colorado, sent to you by his attorney for an impairment rating. He complains of severe lower back pain and bilateral lower extremity weakness, all of which he relates to an industrial injury in 2012. At that time, he was en route from Chicago to Greeley when he stopped for coffee in Omaha. Upon leaving the truck stop, he decided to check the air pressure in two of his tires. As he leaned forward and applied the pressure gauge, he experienced a sudden sharp, stabbing pain in his lower back and "electric shocks" down the backs of both thighs and legs – all the way to his heels. He reported the incident to his employer who provided him a local orthopedic surgeon as one of the authorized provider choices.

Plain films demonstrate significant disc space narrowing at L_5-S_1 and a "vacuum disc" is present at the L_5-S_1 level. His physical examination reveals decreased bilateral foot plantar flexion at 4/5 against resistance and slightly decreased ankle jerks bilaterally at 1/4. Straight leg raise is positive bilaterally. The patient is started on a standard conservative management program. After 2 months off work he is no better. An MRI scan demonstrated very significant disc desiccation and a large midline HNP at the L_5-S_1 level with displacement of both S_1 nerve roots. The L_4-L_5 disc demonstrates mild desiccation and minimal concentric bulging with no nerve root compression. Electrodiagnostic studies are positive for a bilateral S_1 nerve root irritation. The patient undergoes an L_5 discectomy in early 2013 and then a repeat discectomy for recurrent herniation at the end of 2013. During 2014, he undergoes two courses of physical therapy and a Work Hardening Program. His former employer cannot accommodate his 40 lb. lifting restriction. He is being sent to you for an impairment rating.

The patient is completely cooperative with your evaluation today. He can stand erect with some pain at the lumbosacral junction, where there is also midline point tenderness. Some pain extends into the buttocks bilaterally. His range of motion study results are recorded on the ROM form. He has normal sensation in lower extremities but decreased bilateral foot plantar flexion at 4/5 against resistance. He has slightly decreased ankle jerks bilaterally at 1/4.

QUESTIONS:

1. Would you consider this patient's condition stable and ratable, and therefore at MMI?

2. Assuming you believe that his condition is stable, what are the rateable components?

3. Calculate his ratable impairment

Figure 83. Lumbar Range of Motion

Movement	Description	Range					
Lumbar Flexion	T12 ROM	**91**	**95**	**94**			
	Sacral ROM	**48**	**47**	**45**			
	True lumbar flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum true lumbar flexion angle						
	% impairment						
Lumbar Extension	T12 ROM	**27**	**27**	**29**			
	Sacral ROM	**7**	**8**	**10**			
	True lumbar extension angle						
	±10% or 5°?	Yes ☐	No ☐	(add Sacral flexion and extension ROM and compare to tightest Straight Leg Raising Angle)			
	Maximum true lumbar extension angle						
	% impairment						
Straight Leg Raising, Right	Right SLR	**84**	**81**	**80**			
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Right						
Straight Leg Raising, Left	Left SLR	**67**	**68**	**67**			
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Left						
Lumbar Right Lateral Flexion	T12 ROM	**35**	**37**	**35**			
	Sacral ROM	**15**	**17**	**17**			
	Lumbar right lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar right lat flexion angle						
	% Impairment						
Lumbar Left Lateral Flexion	T12 ROM	**20**	**22**	**20**			
	Sacral ROM	**5**	**10**	**7**			
	Lumbar left lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar left lat flexion angle						
	% Impairment						
Lumbar Ankylosis in Lateral Flexion	Position			(Excludes any impairement for abnormal flexion/extension motion)			
	% Impairment						
Total Lumbar Range of Motion Impairment (*add* all ROM impairments if no ankylosis: use ankylosis impairment value if ankylosis is present)							

Straight-Leg Raise (SLR) Validity Test for Lumbar Flexion

1. Max SLR Right _____
   Max SLR Left _____
2. Tightest SLR _____ **(Select smallest number from Step 1)**
3. Sum of best **sacral** flexion and **sacral** extension measurements _____ (Selected from above). Use **Sacral ROM,** NOT true lumbar flexion/extension angles.
4. Tightest SLR **-** (Sacral flexion + Sacral extension)
   (Step 2) _____ - (Step 3) _____ = _____
5. If the above (#4) *is greater than 10 degrees, lumbar flexion is invalid*
6. **For final invalidation,** claimant must have 2 sets of 3 measurements on 2 separate dates (total of 12).
   - See Level II Accreditation Curriculum (ROM of Spine) (Impairment Rating Tips)
   - DOWC Website: www.colorado.gov/cdle/dwc

Figure 84. Spine Impairment Summary

Impairment	Cervical	Thoracic	Lumbar
1. Due to Specific Disorders (Table 53 or Table 54)			
2. Range of Motion			
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength			
4. Other–From Sec. 3.4 p. 101			
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)			
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)			

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	% Impairment	*Guides* Page No.
a.		
b.		
c.		
d.		
e.		

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

Answers:

1.Yes, patient is stable and at MMI

2.The ratable components are AMA Guides Table 53 diagnostic impairment rating for the surgically treated L5 disc and second surgery, ROM deficits and S1 motor nerve rating.

3.Diagnosis:

- *AMA Guides Table 53 II (E) 10% and second surgery of the same disc (G) =2%, overall **12% rating***

*ROM: **7%***

Nerve impairment: S1 motor

- *AMA Guides Table 49 (p. 76) S1 nerve root: 20%*
- *AMA Guides Table 11 (p. 42) Grade 2: 1-25% and chose 25%*
- *20%x25%= 5% LE impairment*
- *Convert 5% LE to whole person using AMA Guides Table 46 (p. 72) = 2%*
- *Right LE 2% whole person combined with Left LE 2% whole person = **4%** overall nerve impairment rating*

*Overall impairment : **Combine** 12% (AMA Guides Table 53 diagnosis rating),7% (Range of motion rating) and 4% (nerve impairment whole person rating) using the Combined Values Chart (AMA Guides p. 254) = **21%** impairment*

*The additional level noted as disc desiccation in the history is not given a rating under *AMA Guides* Table 53 II (F) as radiologic findings not clearly associated with pathology are not rated per Impairment Rating Tips.

Figure 83. Lumbar Range of Motion

Movement	Description	Range					
Lumbar Flexion	T12 ROM	**91**	**95**	**94**			
	Sacral ROM	**48**	**47**	**45**			
	True lumbar flexion angle	**43**	**48**	**49**			
	±10% or 5°?	Yes ☑	No ☐				
	Maximum true lumbar flexion angle	**49**					
	% impairment	**2%**					
Lumbar Extension	T12 ROM	**27**	**27**	**29**			
	Sacral ROM	**7**	**8**	**10**			
	True lumbar extension angle	**20**	**19**	**19**			
	±10% or 5°?	Yes ☑	No ☐	(add Sacral flexion and extension ROM and compare to tightest Straight Leg Raising Angle)			
	Maximum true lumbar extension angle	**20**					
	% impairment	**2%**					
Straight Leg Raising, Right	Right SLR	**84**	**81**	**80**			
	±10% or 5°?	Yes ☑	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Right	**84**					
Straight Leg Raising, Left	Left SLR	**67**	**68**	**67**			
	±10% or 5°?	Yes ☐	No ☑	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Left	**68**					
Lumbar Right Lateral Flexion	T12 ROM	**35**	**37**	**35**			
	Sacral ROM	**15**	**17**	**17**			
	Lumbar right lat flexion angle	**20**	**20**	**18**			
	±10% or 5°?	Yes ☑	No ☐				
	Maximum lumbar right lat flexion angle	**20**					
	% Impairment	**1%**					
Lumbar Left Lateral Flexion	T12 ROM	**20**	**22**	**20**			
	Sacral ROM	**5**	**10**	**7**			
	Lumbar left lat flexion angle	**15**	**12**	**13**			
	±10% or 5°?	Yes ☑	No ☐				
	Maximum lumbar left lat flexion angle	**15**					
	% Impairment	**2%**					
Lumbar Ankylosis in Lateral Flexion	Position			(Excludes any impairement for abnormal flexion/extension motion)			
	% Impairment						
Total Lumbar Range of Motion Impairment (*add* all ROM impairments if no ankylosis: use ankylosis impairment value if ankylosis is present)		**7%**					

Straight-Leg Raise (SLR) Validity Test for Lumbar Flexion

1. Max SLR Right **84**
   Max SLR Left **68**
2. Tightest SLR **68** **(Select smallest number from Step 1)**
3. Sum of best **sacral** flexion and **sacral** extension measurements **48+10=58** (Selected from above). Use **Sacral ROM,** NOT true lumbar flexion/extension angles.
4. Tightest SLR **-** (Sacral flexion + Sacral extension)
   (Step 2) **68** - (Step 3) **58** = **10(valid)**
5. If the above (#4) *is greater than 10 degrees, lumbar flexion is invalid*
6. **For final invalidation,** claimant must have 2 sets of 3 measurements on 2 separate dates (total of 12).
   - See Level II Accreditation Curriculum (ROM of Spine) (Impairment Rating Tips)
   - DOWC Website: www.colorado.gov/cdle/dwc

Figure 84. Spine Impairment Summary

Impairment	Cervical	Thoracic	Lumbar
1. Due to Specific Disorders (Table 53 or Table 54) **Table 53 II E, G**			**12%**
2. Range of Motion			**7%**
3. Neurologic System: Loss of Sensation With or Without Pain **2% & 2% = 4%** **25%x20%= 5%LE, 2% WP (per LE)** Loss of Strength			**4%**
4. Other–From Sec. 3.4 p. 101			
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)			**21%**
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)			**21%**

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

	Impaired System	% Impairment	*Guides* Page No.
a.			
b.			
c.			
d.			
e.			

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

Total whole person impairment: **21%**

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Figure 81. Cervical Range of Motion

Movement	Description	Range					
Cervical Flexion	Occipital ROM						
	T1 ROM						
	Cervical flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical flexion angle						
	% Impairment						
Cervical Extension	Occipital ROM						
	T1 ROM						
	Cervical extension angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical extension angle						
	% Impairment						
Cervical Ankylosis in Flexion/Extension	Position			(Excludes any impairment for			
	% Impairment			abnormal flexion/extension motion)			
Cervical Right Lateral Flexion	Occipital ROM						
	T1 ROM						
	Cervical right lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical right lat flexion angle						
	% Impairment						
Cervical Left Lateral Flexion	Occipital ROM						
	T1 ROM						
	Cervical left lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical left lat flexion angle						
	% Impairment						
Cervical Ankylosis in Lateral Flexion	Position			(Excludes any impairment for			
	% Impairment			abnormal flexion/extension motion)			
Cervical Right Rotation	Cervical right rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical right rotation angle						
	% Impairment						
Cervical Left Rotation	Cervical left rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum cervical left rotation angle						
	% Impairment						
Cervical Ankylosis in Rotation	Position			(Excludes any impairment for			
	% Impairment			abnormal flexion/extension motion)			
Total Cervical Range of Motion Impairment (*add* all ROM impairments if no ankylosis; use largest ankylosis impairment value if ankylosis is present)		_____%					

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Figure 82. Thoracic Range of Motion

Movement	Description	Range					
Angle of Minimum Kyphosis (Thoracic Ankylosis in Extension)	T1 reading		xxxx	xxxx	xxxx	xxxx	xxxx
	T12 reading		xxxx	xxxx	xxxx	xxxx	xxxx
	Angle of minimum kyphosis		xxxx	xxxx	xxxx	xxxx	xxxx
	% Impairment due to thoracic ankylosis	(Use larger of either ankylosis or flexion impairment)					
Thoracic Flexion	T1 ROM						
	T12 ROM						
	Thoracic flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum thoracic flexion angle						
	% Impairment						
Thoracic Right Rotation	T1 ROM						
	T12 ROM						
	Thoracic right rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum thoracic right rotation angle						
	% Impairment						
Thoracic Left Rotation	T1 ROM						
	T12 ROM						
	Thoracic left rotation angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum thoracic left rotation angle						
	% Impairment						
Thoracic Ankylosis in Rotation	Position	_____					
	% Impairment	(Excludes any impairment for abnormal flexion/extension motion)					
Total Thoracic Range of Motion Impairment (add all ROM impairments if no ankylosis is present; use larger ankylosis impairment value if ankylosis is present)		_____%					

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Figure 83. Lumbar Range of Motion

Movement	Description	Range					
Lumbar Flexion	T12 ROM						
	Sacral ROM						
	True lumbar flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum true lumbar flexion angle						
	% impairment						
Lumbar Extension	T12 ROM						
	Sacral ROM						
	True lumbar extension angle						
	±10% or 5°?	Yes ☐	No ☐	(add Sacral flexion and extension ROM and compare to tightest Straight Leg Raising Angle)			
	Maximum true lumbar extension angle						
	% impairment						
Straight Leg Raising, Right	Right SLR						
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Right						
Straight Leg Raising, Left	Left SLR						
	±10% or 5°?	Yes ☐	No ☐	(if tightest SLR ROM exceeds sum of Sacral flexion and extension by more than 10°, Lumbar ROM test is invalid)			
	Maximum SLR Left						
Lumbar Right Lateral Flexion	T12 ROM						
	Sacral ROM						
	Lumbar right lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar right lat flexion angle						
	% Impairment						
Lumbar Left Lateral Flexion	T12 ROM						
	Sacral ROM						
	Lumbar left lat flexion angle						
	±10% or 5°?	Yes ☐	No ☐				
	Maximum lumbar left lat flexion angle						
	% Impairment						
Lumbar Ankylosis in Lateral Flexion	Position			(Excludes any impairement for abnormal flexion/extension motion)			
	% Impairment						
Total Lumbar Range of Motion Impairment (*add* all ROM impairments if no ankylosis: use ankylosis impairment value if ankylosis is present)							

Straight-Leg Raise (SLR) Validity Test for Lumbar Flexion

1. Max SLR Right _____
   Max SLR Left _____
2. Tightest SLR _____ **(Select smallest number from Step 1)**
3. Sum of best **sacral** flexion and **sacral** extension measurements _____ (Selected from above). Use **Sacral ROM,** NOT true lumbar flexion/extension angles.
4. Tightest SLR - (Sacral flexion + Sacral extension)
   (Step 2) _____ - (Step 3) _____ = _____
5. If the above (#4) *is greater than 10 degrees, lumbar flexion is invalid*
6. **For final invalidation,** claimant must have 2 sets of 3 measurements on 2 separate dates (total of 12).
   - See Level II Accreditation Curriculum (ROM of Spine) (Impairment Rating Tips)
   - DOWC Website: www.colorado.gov/cdle/dwc

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Figure 84. Spine Impairment Summary

Impairment	Cervical	Thoracic	Lumbar
1. Due to Specific Disorders (Table 53 or Table 54)			
2. Range of Motion			
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength			
4. Other–From Sec. 3.4 p. 101			
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)			
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)			

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	% Impairment	*Guides* Page No.
a.		
b.		
c.		
d.		
e.		

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

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Figure 84. Spine Impairment Summary

Impairment	Current			Prior	Apportioned
	Cervical	**Thoracic**	**Lumbar**		
1. Due to Specific Disorders (Table 53 or Table 54)					
2. Range of Motion					
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength					
4. Other–From Sec. 3.4 p. 101					
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)					
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)					

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	Guides Page No.	Current Impairment	Prior	Apportioned
a.				
b.				
c.				
d.				
e.				

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

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DEPARTMENT OF LABOR AND EMPLOYMENT
Division of Workers' Compensation

EVALUATION OF PREVIOUS SPINAL ROM IMPAIRMENT

For use in apportionment of spinal conditions when no previous injury ROM measurements or impairment rating exist to accompany a previous injury Table 53 rating. A previous injury Table 53 rating is required to proceed with rating previous ROM impairment.

If the patient has previous injury spinal range of motion measurements taken consistent with the AMA Guides 3rd edition (revised), the impairment from those measurements should be subtracted from the ROM impairment calculated for the current spinal injury and this worksheet should not be used.

INSTRUCTIONS:

1. First, the physician must establish the maximum allowable spinal deficit impairment for ROM apportionment of the **previous injury** using **Table A**. Pay attention to footnotes associated with each condition. Remember that a minimum of 6 months of medically documented pain and rigidity with or without muscle spasm may be required to support certain Table 53 impairment ratings.

2. The physician completes **Table B** to determine the severity category (none, mild, moderate or severe) that best represents the state of the patient **in the year prior to the current injury**, except in the case of a multi-level fusion (see Table A footnotes). In many cases, all of the information in Table B may not be available. In that case, indicate the information that is missing on Table B and determine the severity category from the available information. Each severity category in Table B has an associated Severity Index Range. After you have determined the appropriate severity category, determine a Severity Index percentage from that category that you believe best represents the patient.

3. Calculate the Previous Spinal ROM Impairment percentage using the **Calculation of Apportionable ROM** section at the end of this worksheet.

4. **Submit completed worksheet** with any other required worksheets.

TABLE A

Maximum Allowable Spinal Deficits for Range of Motion Apportionment of Previous Injuries

	Total Apportionable Impairment Percentage for Range of Motion		
Medical Condition (using Table 53 p. 80 as a reference)	**Cervical**	**Thoracic**	**Lumbar**
Spinal Fusion[1]	14%	4%	12%
Other surgically-treated disc lesions[2]	6%	2%	5%
Other disorders rated under Table 53[3]	3%	1%	3%

[1] For one-level fusion, complete severity category rating (Table B) as directed. For a two or multi-level fusion, use the full 14%, 4% or 12% (as appropriate to the spinal region).

[2] If diskectomy is done in conjunction with fusion, rate only as indicated for the fusion.

[3] This includes all other Table 53 ratings including diagnosis for fracture, spinal stenosis, spondylolysis, spondylolistheses, or chronic pain with medically documented injury and a minimum of six months medically documented pain and rigidity with or without muscle spasm.

TABLE B

Severity Index Worksheet for Evaluation of Range of Motion Deficit from a Previous Spinal Injury[1]

Severity:	**None** ✓	**Mild** ✓	**Moderate** ✓	**Severe** ✓	**Not Available** ✓
Restriction in activity (work and activities of daily living) caused by previous spinal injury	Full Activity (no restrictions)	Temporary episode-related restriction	Some permanent restriction	Limited to sedentary activities	
Number of episodes within the year prior to the current injury causing functional disability	0	1	2 - 3	>3	
Time lost from work in last 12 months due to the previous injury	0	1-2 days	3-5 days	>5 days	
Medical visits (MD, DO, DC) in the last 12 months due to the previous injury	None	1-2 visits	3-6 visits	>6 visits	
Severity Index Range	0%	1-33%	34-66%	67-100%	

[1] This table only applies when the previous injury occurred in the same spinal area—cervical, thoracic or lumbar—as the work-related injury being rated.

Calculation of Apportionable ROM

Regional Impairment Percentage _____% (Table A) x Severity Index (if applicable) _____% (Table B)

= _____% ROM Impairment due to previous injury*

*Use this value as Previous ROM Impairment on Apportionment Calculation Worksheet for spinal conditions. Round 0.5% up to the next whole number, less than 0.5% down to the nearest whole number.

Apportionment Calculation Worksheet

Patient Name: _____

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

- ☐ No → Do NOT apportion
- ☐ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:

- ☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
- ☐ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- ☐ The previous condition is **work related** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related** and is **disabling**[2] → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related and is NOT disabling**[2] → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53				%WP
ROM				%WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				%WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Upper Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% UE	
Nerve			% UE	
Other			% UE	
Final Combined Apportioned Rating			% UE	%WP

Lower Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% LE	
Nerve			% LE	
Other			% LE	
Final Combined Apportioned Rating			% LE	%WP

Other	**Current Total**	**Previous**	**Apportioned**	
			% ext	%WP
			% ext	%WP
			% ext	%WP
Final Combined Apportioned Rating			% ext	%WP

Example:

The patient had a previous lumbar strain/sprain with Table 53 diagnostic rating of 5% and 5% ROM impairment. The current injury involves L4-5 disc herniation, unoperated. Current ROM rating is 10%. Remember for Table 53 Sections II, III and IV, the available sub values cannot be combined as these values are designed to represent progression of the disease state that has occurred. Thus, as a condition worsens, the Table 53 diagnosis changes within these sections but combining is not allowed when accounting for the patient's current impairment.

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53	IIC: 7%	IIB: 5%		2 %WP
ROM	10%	5%		5 %WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				**7** %WP

Lower Extremity Impairment Ratings

AMA Guides, 3rd Edition, revised: Chapter 3 (p. 78)

Objectives:

1) Demonstrate the ability to properly utilize diagnostic and ROM tables to calculate lower extremity impairment.
2) Determine a lower extremity impairment rating when an amputation is involved.
3) Utilize the Lower Extremity Impairment Worksheet to record and calculate a lower extremity impairment rating using a workshop case.

Summary/Steps for Determining Lower Extremity Impairment Rating

1) Determine if the injury is an amputation if so, refer to *AMA Guides* Table 47 (p. 73) to rate the injured lower extremity.
    a) Document the percent impairment on the Lower Extremity Impairment Worksheet as the whole person impairment rating.
2) Determine the diagnosis-related impairment using *AMA Guides* Table 40 (p. 68) for the knee, *AMA Guides* Table 45 (p. 72) for the hip, and/or the Division's Impairment Rating Tips (Desk Aid 11) for the foot/ankle.
    a) Diagnosis-related impairments of the **hip, knee, and ankle** are reported at the lower extremity level and should be recorded in the "List Other Disorders" section on the lower extremity impairment worksheet for the appropriate joint.
    b) Diagnosis-related impairments of the **foot** are reported at the foot level and should be recorded under "Other Regional Foot Impairments" on part 1 of the lower extremity impairment worksheet.
3) Determine the range of motion impairment by referencing the *AMA Guides* for instruction on goniometric measurements and measure all involved joints.
    a) Measure all planes of motion for each involved joint, in relation to the "neutral" position, and document on the Lower Extremity Impairment worksheet.
    b) Apply the range of motion measurements to the appropriate Tables in the *AMA Guides* (pp. 56-70) and record the impairment on the Lower Extremity Impairment worksheet.
    c) If ankylosis is rated, only use the plane of motion yielding the highest impairment.
    d) **Add** impairment for all planes of motion within that body part.
4) **Combine** diagnosis impairment from step 2 with total ROM impairment for the region/joint(foot, ankle, knee, or hip) from step 3 to determine the Total Foot Impairment or Regional Impairment and record in the appropriate section on the lower extremity worksheet.

5) If multiple joints are involved, **combine** the total for each joint from step 4, documenting in Section I. on the Lower Extremity Impairment worksheet (part 2).
    a) Total Foot Impairment must be converted to Lower Extremity Impairment using *AMA Guides* Table 36 (p. 65) prior to combining with other lower extremity ratings in Section I of the lower extremity worksheet part 2.
6) Determine the Peripheral Nervous System Impairment, if applicable.
    a) If Peripheral Nervous System impairment exists, document the sensory and/or motor lower extremity rating in Section II. on the Lower Extremity Impairment Worksheet.
7) Determine the Peripheral Vascular System Impairment, if applicable.
    a) If Peripheral Vascular System Impairment exists, document the impairment in Section III. on the Lower Extremity Impairment Worksheet.
8) **Combine** the total values from Sections I - III and document in Total Lower Extremity Impairment on the Lower Extremity Impairment Worksheet.
9) **Convert** the Total Lower Extremity Impairment to the Whole Person Impairment Rating using *AMA Guides* Table 46 (p. 72).
10) When the impairment is **bilateral,** each **lower extremity** is **converted** to **whole person,** and then both ratings are **combined** at the **whole person level** (*AMA Guides* Combined Values Chart, p. 254) for the final whole person rating.

References/Links
Lower Extremity Impairment Worksheet - Part I: Toes (optional worksheet)
Lower Extremity Impairment Worksheet - Part II: Hip, knee and ankle
Apportionment Calculation Worksheet (Desk Aid 14), if applicable
Medical Treatment Guidelines: Lower Extremity
Impairment Rating Tips (Desk Aid 11)

Core Content: Per the *AMA Guides, third edition, revised*, lower extremity impairment ratings are predominantly based on range of motion deficits, except the knee and the hip, which also have diagnostically related impairments. However, diagnostically related impairments of the foot and ankle have been established by the Division and can be found in the Division's Impairment Rating Tips (Desk Aid 11). Peripheral nervous system, peripheral vascular system impairments, and amputation impairment are also utilized to rate the lower extremity.

Lower Extremity Impairment General Principles: In a workers' compensation case, a complete physical examination is expected which includes the essential elements:

- Inspection
- Palpation
- Range of Motion Testing
- Sensation
- Muscle Strength
- Reflexes
- Vascular Status

Amputation

Amputation of the Lower Extremity: When an amputation of the lower extremity occurs, the physician is required to calculate the percentage impairment by referring to *AMA Guides* Table 47 (p. 73). This can be combined with other impairments of the lower extremity.

Amputation of the toes: If an amputation occurs at a specific joint of the toe, refer to the range of motion table for that joint. Impairment for amputation is located at the top of each table. These values are expressed at the digit level and should be converted to foot impairment, then lower extremity impairment and then whole person.

If toe amputation does not occur at the joint, please consult the *AMA Guides, 3rd edition, revised* (pp. 56-60) to calculate impairment.

Amputation of Multiple Toes: Impairment of each toe is expressed as a percentage of the foot. These values are **added** to arrive at the total foot impairment. Refer to *AMA Guides* Table 35 (p. 64) - Impairment of Foot Due to Amputation and Ankylosis of Multiple Digits.

Diagnosis of the Lower Extremity:

The medical record should clearly state the diagnosis being rated. For lower extremity impairments, *AMA Guides* Table 40 (p. 68) and *AMA Guides* Table 45 (p. 72) indicate ratings for diagnostic and surgical impairments of the knee and hip, respectively. Ratings for diagnostic impairments of the foot and ankle can be found in the Division's Impairment Rating Tips (Desk Aid 11). The disorder ratings should then be combined with other ratings for that body part to derive a total impairment rating for that joint.

Additional Information on Knee Diagnosis Impairment from the Division's Impairment Rating Tips

- If a partial knee joint replacement is performed, the rating will be for a hemiarthroplasty or 10%. Any additional pathology present in that knee is ratable under Table 40 and combined with the 10%.

Additional Information on Ankle and Foot Impairment Ratings from the Division's Impairment Rating Tips

- The *AMA Guides, 3rd edition (revised)* does not include impairment ratings for foot and ankle fractures or arthritis. When documentation of functional change justifies a rating, choose a value from the given range that you deem appropriate for the injury. The following impairments must be combined with the appropriate range of motion impairment:

Fractures:

Calcaneal

Mild malalignment	**0-4% *foot* impairment**
Moderate malalignment	**5-8% *foot* impairment**
Severe malalignment	**9-14% *foot* impairment**

Talus

Mild malalignment	**0-4% *lower extremity* impairment**
Moderate malalignment	**5-7% *lower extremity* impairment**
Severe malalignment	**9-13% *lower extremity* impairment**
Non union	**11-25% *lower extremity* impairment**

Ankle with malalignment (including tibial pilon)

Mild malalignment	**0-7% *lower extremity* impairment**
Moderate malalignment	**8-15% *lower extremity* impairment**
Severe malalignment	**16-25% *lower extremity* impairment**

Metatarsal Fractures:

1st & 5th metatarsals

Non union	**0-10% *foot* impairment**
Malalignment	**0-7% *foot* impairment**

2nd-4th metatarsals

Non union	**0-5% *foot* impairment**
Malalignment	**0-4% *foot* impairment**

LisFranc: Applies to 1st and 2nd TMT joint as these are the most involved and symptomatic

Mild malalignment	**0-6% *foot* impairment**
Moderate malalignment	**7-14% *foot* impairment**
Severe malalignment	**15-21% *foot* impairment**

Arthritis:

Tibiotalar Joint	**0-20% *lower extremity* impairment**
Subtalar Joint	**0-10% *lower extremity* impairment**

Midfoot Arthritis

Talonavicular	**0-11% *foot* impairment**
Calcaneocuboid	**0-5% *foot* impairment**

1st-5th TMT joints ● 1st -3rd TMT joint will result in more functional impairment versus 4th and 5th because these are weight bearing joints	**0-11% *foot* impairment**
1st MTP joint	**0-30% *great toe* impairment**

Range of Motion

Ankylosis which is defined as "complete absence of motion or planar restriction of motion preventing the subject from reaching the neutral position of motion in that plane" should be considered with ROM impairment.

Each range of motion table has a section for rating the joint due to ankylosis. If the joint is rated for ankylosis, other range of motion measurements for that joint should generally not be calculated as part of the impairment. Only the highest rating due to ankylosis is given.
For example: if the ankle was ankylosed at 10 degrees of plantar flexion, the ROM impairment for the ankle would be 40% of the lower extremity according to *AMA Guides* Table 37 (p. 66). No additional impairment should be given for dorsiflexion, inversion or eversion.

Determine the range of motion, amputation and ankylosis impairment of applicable joints using the following ROM Tables in the AMA Guides:

Joint/Motion	**Table #**	**Page #**
Great toe, Interphalangeal joint	24	56
Great toe, Dorsiflexion	25	58
Great toe, Plantar flexion	26	58
2nd-5th toe, DIP joint dorsi-plantarflexion, and amputation	28	60
2nd-5th toe, PIP joint dorsi-plantarflexion, and amputation	29	60
2nd toe, MTP joint dorsi-plantarflexion, and amputation	30	61
3rd toe, MTP joint dorsi-plantarflexion, and amputation	31	62
4th toe, MTP joint dorsi-plantarflexion, and amputation	32	62
5th toe, MTP joint dorsi-plantarflexion, and amputation	33	63
Hind foot, Dorsi-plantar flexion	37	66
Hind foot, Inversion-Eversion	38	67
Knee joint	39	68
Hip Joint, forward flexion	41	69
Hip Joint, backward flexion	42	70
Hip Joint, Abduction-Adduction	43	70
Hip Joint, Rotation	44	70

Great Toe: Lower Extremity Worksheet - Part 1 (toes) is optional. If the worksheet is not used, detailed documentation of the following steps must be in the narrative report.
Measure range of motion and use the following tables to determine impairment for MTP (*AMA Guides* Tables 25-26, p. 58) and IP joints (*AMA Guides* Table 24, p. 56).
Calculate amputation if present.
Add ROM impairment at each joint.
Combine ROM/ankylosis impairment for MTP and IP joints using the Combined Values Chart (*AMA Guides* p. 254).
Combine the total ROM deficit with amputation, if applicable.
Convert the great toe impairment rating to the foot using *AMA Guides* Table 27, p. 59.
Add all toe impairments at the foot level to calculate a Total Foot Impairment.
Convert the total foot impairment rating to lower extremity using *AMA Guides* Table 36, p. 65.
Combine all lower extremity impairments for the **same** (i.e. left foot and left ankle) extremity.
Convert the lower extremity rating to whole person using *AMA Guides* Table 46, p. 72.

2nd through 5th Toes
Measure ROM of the MTP joints and ankylosis of the PIP and DIP joints. Use the appropriate tables to determine impairment. There is no value for functional ROM of the PIP and DIP joints.
Calculate amputation if present.
Add ROM impairment for the MTP joint.
Combine the MTP ROM/ankylosis with PIP and DIP ankylosis impairments for each toe.
Combine ROM impairment with amputation, if applicable.
Convert the toe impairment rating to the foot using *AMA Guides* Table 34, p. 64.
Add all toe impairments at the foot level to calculate a Total Foot Impairment.
Convert the foot impairment rating to lower extremity using *AMA Guides* Table 36, p. 65.
Combine all lower extremity impairments for the **same** (i.e. left foot and left ankle) extremity.
Convert the lower extremity rating to whole person using *AMA Guides* Table 46, p. 72.

Hind Foot/Ankle
Measure ROM and use the following tables to determine impairment for dorsi/plantar flexion (*AMA Guides* Table 37, p. 66) and inversion/eversion (*AMA Guides* Table 38, p. 67).
Add ROM impairment for the ankle.
Combine ROM impairment with other disorders if applicable.

- *AMA Guides* Table 37 (p. 66) also provides a rating for ankle instability due to lateral and medial collateral ligament loss and arthroplasty of the joint. These values should be combined with the ROM impairment.

Combine all lower extremity impairments for the **same** (i.e. left foot and left ankle) extremity.

Convert the lower extremity rating to whole person using *AMA Guides* Table 46, p. 72.

Knee
Measure flexion and extension ROM and determine impairment using *AMA Guides* Table 39 (p. 68).
Add ROM impairment for flexion and extension.
Combine ROM impairment with other disorders of the knee from *AMA Guides* Table 40, p. 68 if applicable.
Combine all lower extremity impairments for the **same** (i.e. left foot and left ankle) extremity.
Convert the lower extremity rating to whole person using *AMA Guides* Table 46, p. 72.

Hip
Measure all hip ROM and determine impairment using *AMA Guides* Tables 41-44 (pp. 69-70).
Add ROM impairment for the hip.
Combine ROM impairment with other Disorders of the Hip from *AMA Guides* Table 45, p. 72 if applicable.
Combine all lower extremity impairments for the **same** (i.e. left foot and left ankle) extremity.
Convert the lower extremity rating to whole person using *AMA Guides* Table 46, p. 72.

Multiple Lower Extremity Impairments
Combine impairment ratings for the same extremity in order from distal to proximal using the Combined Values Chart (*AMA Guides* p. 254) to determine the lower extremity rating.
Convert the total lower extremity impairment to whole person using *AMA Guides* Table 46, p. 72.
Combine impairment of the left whole person with the right whole person to determine the total whole person impairment.
ALWAYS report lower extremity and whole person ratings on worksheets and in the written report.

Additional Information for Lower Extremity ROM from the Division's Impairment Rating Tips

- Only *active* range of motion measurements should be used to determine impairment with the examiner NOT assisting the patient. Passive range of motion may be measured to assess the validity of the active range of motion measurements, but not for obtaining measurements for the impairment rating.
- The contralateral joint can be measured to compare both extremities when there are specific conditions which would make the opposite, non-injured extremity serve as a better individual baseline. This process is termed "normalization." Therefore, when deemed appropriate, the physician may subtract the contralateral joint ROM impairment from the injured joint ROM impairment.

Peripheral Nervous System Disorders for the Lower Extremity

1. Use the physical examination to identify the affected nerve if there is a motor and/or sensory deficit.
2. Use the appropriate tables within the *AMA Guides* to determine the total value of the sensory (2nd column) or motor deficit (3rd column) for the affected nerve. *These values are expressed in Lower Extremity Units.*
    a. Table 49 (p. 76) Unilateral Spinal Nerve Root (L3-S1)
    b. Table 50 (p. 76) Unilateral Lumbosacral Plexus
    c. Table 51 (p. 77) Unilateral Spinal Nerve affecting the Lower Extremity
3. Determine the percent deficit or grade of the affected nerve using *AMA Guides* Tables 10 (sensory) and 11 (motor) on p. 42.
4. The total value of the nerve impairment for a sensory deficit from step 2 is multiplied by the percent value from *AMA Guides* Table 10 in step 3.
5. The total value of the nerve impairment for a motor deficit from step 2 is multiplied by the percent value from *AMA Guides* Table 11 in step 3.
6. **Combine** motor and sensory impairment values from steps 4 and 5 using the Combined Values Chart (*AMA Guides* p. 254).
7. **Combine** with other impairments for the same extremity using the Combined Values Chart (*AMA Guides* p. 254) at the lower extremity level.
8. **Convert** the total lower extremity impairment to whole person using *AMA Guides* Table 46, p. 72.

Vascular Disorders of the Lower Extremity

Use *AMA Guides* Table 52 (p. 79) to determine *Impairment of the Lower Extremity Due to Peripheral Vascular Disease*. This table establishes five classes of ratings. Be sure to pay attention to the “and’s” and “or’s” when reading this table.

Combine all lower extremity impairments for the **same** (i.e. left foot and left ankle) extremity.
Convert the lower extremity rating to whole person using *AMA Guides* Table 46, p. 72.

Pitfalls

If using normalization for lower extremity ROM, you must provide a worksheet for each lower extremity.

Exclusions/Omissions in the *AMA Guides*: The sections labeled as “Degrees of Motion Lost and Retained” in the following tables are for information only and are not used to perform any ratings. It is preferable to cross this section out to avoid confusion:

- Tables 24 (p. 56)
- Tables 25&26 (p. 58)
- Table 30 (p. 61)
- Tables 31&32 (p. 62)
- Table 33 (p. 63)
- Table 37 (p. 66)
- Table 38 (p. 67)
- Table 41 (p. 69)
- Tables 42-44 (p. 70)

Workshop Case #1:
G.M. is a 58-year-old male construction worker involved in a freak work-related accident in which his bulldozer inadvertently tumbles into a 70-foot abyss. The patient miraculously avoids any major head or spinal cord injuries but does end up with a compound fracture of the proximal left femur and dislocation of the right knee.

After numerous operations, the left femur fails to heal and the patient develops contractures in the hip joint as follows:

- Flexion: 80°
- Backward extension: 10°
- Abduction: 10°
- Adduction: 20°
- Internal rotation: 10°
- External rotation: 20°

Neurological status is normal for the Left lower extremity.

After failing open repair of the right knee, the patient ultimately has a right total knee arthroplasty performed successfully. He does have some mild to moderate loss of sensation and pain over the anterior medial knee, saphenous branch of the femoral nerve (femoral anterior crural nerve) which will occasionally interfere with activities of daily living, such as transfers from his wheelchair to his bulldozer (which he keeps as a memento). Fortunately, G.M. has been able to rehabilitate his right leg back to normal strength.
Right knee ROM:

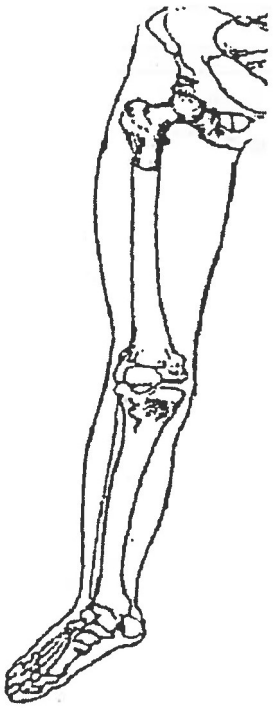
- Flexion: 110°
- Extension:10° (Extension lag)

QUESTION: After three years have passed, the patient is now at MMI. What is his lower extremity impairment and whole person impairment?

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Case #1 SIDE ☐ R ☑ L Date _____

						Abnormal Motion	List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
	Table 37, p.66	Dorsiflex	Plantar	Ankylosis	Impairment %				
Hind Foot	Angle°								
	Impairment %								
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
						[1]			
	Add IMP% of ROM or use largest ANK _____						**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 39, p.68	Flexion	Extension	Ankylosis	Impairment %		**Table 40 Diagnosis: p.68**		
Knee	Angle°								
	Impairment %								
						[1]			
	Add IMP% of ROM or use largest ANK _____						**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 41,42, p. 69 70	Flexion	Extension	Ankylosis	Impairment %		**Table 45 Diagnosis: p.72**		
Hip	Angle°	**80**	**10**						
	Impairment %								
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %				
	Angle°	**10**	**20**						
	Impairment %								
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %				
	Angle°	**10**	**20**						
	Impairment %								
						[1]			
	Add Impairment% of ROM or use largest Ankylosis _____						**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

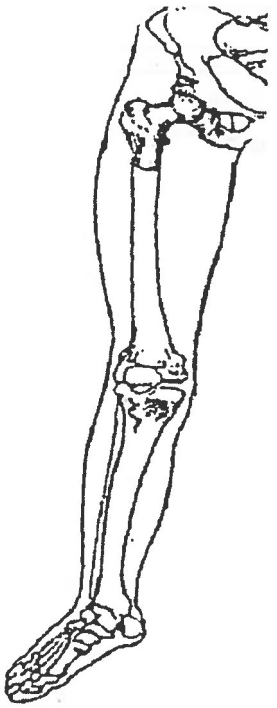
Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46, p. 72) =

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Case #1 SIDE ☑ R ☐ L Date _____

						Abnormal Motion	List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
Hind Foot	**Table 37, p.66**	Dorsiflex	Plantar	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
	Add IMP% of ROM or use largest ANK _____					**[1]**	**IMP% =** _____ **[2]**	**Combine [1] and [2] =** _____	
Knee	**Table 39, p.68**	Flexion	Extension	Ankylosis	Impairment %		**Table 40 Diagnosis: p.68**		
	Angle°	**110**	**10**						
	Impairment %								
	Add IMP% of ROM or use largest ANK _____					**[1]**	**IMP% =** _____ **[2]**	**Combine [1] and [2] =** _____	
Hip	**Table 41,42, p. 69 70**	Flexion	Extension	Ankylosis	Impairment %		**Table 45 Diagnosis: p.72**		
	Angle°								
	Impairment %								
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
	Add Impairment% of ROM or use largest Ankylosis _____					**[1]**	**IMP% =** _____ **[2]**	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46, p. 72) =

Answer:
Left LE hip rating:
AMA Guides Table 45 (p.72) diagnostic rating for non-union hip fracture: ***30%*** *lower extremity*

ROM: Using AMA Guides tables:

- *Flexion: Table 41 (p. 69)= 4%*
- *Extension: Table 42 (p. 70)= 4%*
- *Abduction: Table 43 (p.70) = 12%*
- *Adduction: Table 43 (p.70)= 0%*
- *Internal Rotation: Table 44 (p. 70)= 8%*
- *External Rotation: Table 44 (p.70) = 8%*

Add *the above for a total lower extremity ROM impairment:* ***36%***

Combine *(Combined Values Chart, p. 254) the AMA Guides Table 45 Diagnostic rating (****36%****) and the ROM impairment (****30%****) =* ***55%*** *lower extremity rating*
Convert 55% *lower extremity rating to whole person using AMA Guides Table 46 (p. 72) =* ***22%*** *left lower extremity whole person rating.*

Right LE knee rating:
AMA Guides Table 40 (p.68) diagnostic rating for total knee arthroplasty= ***20%*** *lower extremity rating*

ROM:Using AMA Guides tables:

- *Flexion: Table 39 (p. 68) = 14%*
- *Extension: Table 39 (p. 68) = 1%*

Add *flexion and extension ROM impairment for a total of* ***15%*** *lower extremity impairment*
Combine *(Combined Values Chart, AMA Guides p. 254) the Table 40 Diagnostic rating (****20%****) and the ROM impairment (****15%****)=* ***32%*** *right lower extremity rating*

Nervous System Disorder: Sensory Impairment

- *AMA Guides Table 51 (p. 77) indicates Femoral, anterior crural, below iliacus nerve sensory column =* ***5%***

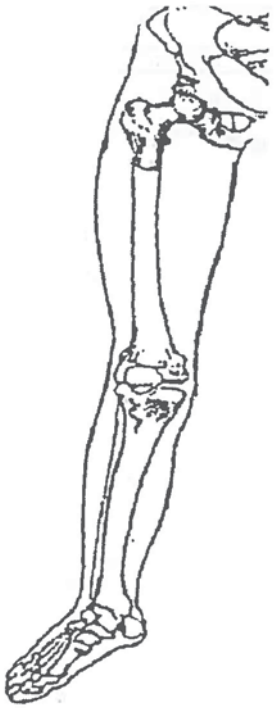
Sensory Grading via AMA Guides Table 10 (p. 42)= ***40%*** *impairment*
Multiply *the grade (****40%****) x the sensory nerve rating (****5%****) =* ***2%*** *lower extremity rating*
Combine *(Combined Values Chart, p. 254) the 32% for diagnostic Table 40 rating and ROM rating, with the* ***2%*** *sensory nerve rating, which equals* ***33%*** *lower extremity rating.*
Convert *the 33% right lower extremity rating to whole person using AMA Guides Table 46 (p. 72) =* ***13%*** *whole person*

Total Whole Person Rating:
Combine *left lower extremity whole person impairment rating (****22%****) with right lower extremity whole person impairment rating* ***(13%) = 32% total whole person rating***

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Case #1- hip answer SIDE ☐ R ☑ L Date _____

						Abnormal Motion	List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
	Table 37, p.66	Dorsiflex	Plantar	Ankylosis	Impairment %				
Hind Foot	Angle°								
	Impairment %								
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
						[1]	[2]		
	Add IMP% of ROM or use largest ANK _____						**IMP% =** _____	**Combine [1] and [2] =** _____	
	Table 39, p.68	Flexion	Extension	Ankylosis	Impairment %		**Table 40 Diagnosis: p.68**		
Knee	Angle°								
	Impairment %								
						[1]	[2]		
	Add IMP% of ROM or use largest ANK _____						**IMP% =** _____	**Combine [1] and [2] =** _____	
	Table 41,42, p. 69 70	Flexion	Extension	Ankylosis	Impairment %		**Table 45 Diagnosis: p.72**		
Hip	Angle°	**80**	**10**		**8**				
	Impairment %	**4**	**4**						
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %				
	Angle°	**10**	**20**		**12**				
	Impairment %	**12**	**0**						
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %				
	Angle°	**10**	**20**		**16**				
	Impairment %	**8**	**8**						
						[1]	[2]		
	Add Impairment% of ROM or use largest Ankylosis **36**						**IMP% =** **30**	**Combine [1] and [2] =** **55**	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip **55** %)

Combined total = **55**

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

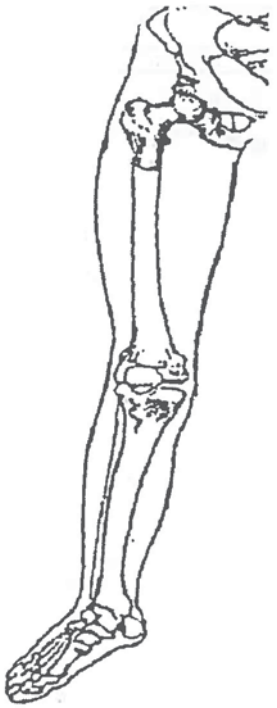
Total Lower Extremity Impairment: = **55**

Impairment of Whole Person (Use Table 46, p. 72) = **22**

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Case #1 Answer SIDE ☑ R ☐ L Date _____

						Abnormal Motion	List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
	Table 37, p.66	Dorsiflex	Plantar	Ankylosis	Impairment %				
Hind Foot	Angle°								
	Impairment %								
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
						[1]	[2]		
	Add IMP% of ROM or use largest ANK _____						**IMP% =** _____	**Combine [1] and [2] =** _____	
	Table 39, p.68	Flexion	Extension	Ankylosis	Impairment %		**Table 40 Diagnosis: p.68**		
Knee	Angle°	**110**	**10**		**15**		Table 40.3		
	Impairment %	**14**	**1**						
						[1]	[2]		
	Add IMP% of ROM or use largest ANK **15**						**IMP% =** **20**	**Combine [1] and [2] =** **32**	
	Table 41,42, p. 69 70	Flexion	Extension	Ankylosis	Impairment %		**Table 45 Diagnosis: p.72**		
Hip	Angle°								
	Impairment %								
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %				
	Angle°								
	Impairment %								
						[1]	[2]		
	Add Impairment% of ROM or use largest Ankylosis _____						**IMP% =** _____	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee **32** % + Hip _____%)

Combined total = **32**

II. Peripheral Nervous System Impairment Computations:

A. Sensation **5%x40%=2%** B. Motor _____

Sensory N.=5%, Grade 3=40%)

Combined Sensory/Motor = **2**

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: = **33%**

Impairment of Whole Person (Use Table 46, p. 72) **13% whole person from knee impairment, combined with 22% from left hip impairment** = **32%**

Workshop Case #2:
K. M. is a 52 year old painter who fell off a ladder falling 18 feet and landing on his right heel on the concrete floor. The patient sustained a comminuted calcaneal fracture which was treated operatively. X-rays were taken 3 months after the injury and showed a well healed fracture with 14 screws in place and moderate malalignment. One year after surgery, the patient was seen for an impairment rating.

The patient complained of ongoing pain in the right heel due to the malaligned fracture site and swelling of the foot which limits him to walking no more than a couple of miles at which time he must rest and elevate the leg. He was limited to approximately 3 hours of standing. He can no longer hike in the mountains and is significantly limited in his ability to mountain bike. Walking on uneven ground is problematic. The most restricting complaint was recalcitrant edema of the foot such that he had difficulties putting on a shoe. He had resorted to getting a larger pair of shoes for the right foot.

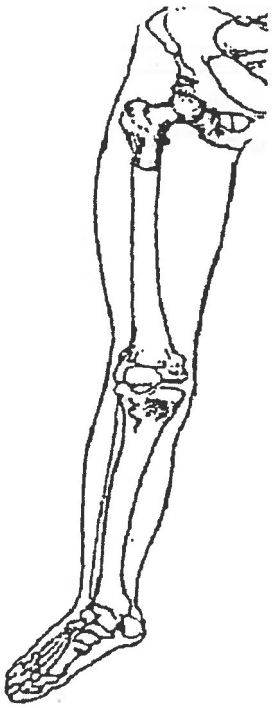
Range of motion measurements were obtained in the late afternoon at which time 3+ pitting edema was documented from just proximal to the ankle distally to the forefoot. The right shoe fit was clearly adversely impacted by edema despite the use of a larger shoe. These measurements are recorded on the appended *Worksheet A*. The patient was seen for a second set of measurements first thing in the morning, at which time only a trace to 1+ edema around the heel region was documented. These measurements are recorded on *Worksheet B*.

1. Calculate an impairment rating.

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Worksheet A- student SIDE ☑ R ☐ L Date _____

	Abnormal Motion					List Other Disorders	Regional Impairment%	Amputation % (Table 47)
Hind Foot	**Table 37**	Dorsiflex	Plantar	Ankylosis	Impairment %			
	Angle°	**20**	**25**					
	Impairment %							
	Table 38	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°	**25**	**10**					
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
Knee	**Table 39**	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis:**		
	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
Hip	**Table 41,42**	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis:**		
	Angle°							
	Impairment %							
	Table 43	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add Impairment% of ROM or use largest Ankylosis _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

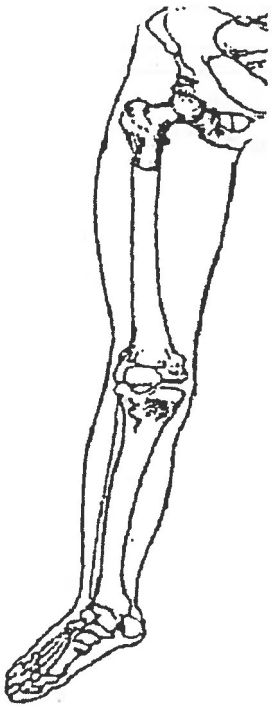
Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46) =

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Worksheet B- student SIDE ☑ R ☐ L Date _____

	Abnormal Motion					List Other Disorders	Regional Impairment%	Amputation % (Table 47)
Hind Foot	**Table 37**	Dorsiflex	Plantar	Ankylosis	Impairment %			
	Angle°	**20**	**40**					
	Impairment %							
	Table 38	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°	**40**	**15**					
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
Knee	**Table 39**	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis:**		
	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
Hip	**Table 41,42**	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis:**		
	Angle°							
	Impairment %							
	Table 43	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add Impairment% of ROM or use largest Ankylosis _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46) =

Answer:

Diagnostic rating:
The impairment rating tips discuss malalignment due to calcaneal fracture. The actual functional effects are significant for this patient, therefore the higher end of moderate malalignment from a calcaneal fracture (5-8%) seems appropriate. 8% foot is equal to ***6%*** *lower extremity on Table 36.*

ROM:
Using AMA Guides tables:

- *Dorsiflexion: Table 37 (p. 66)= 0% (A) and 0% (B)*
- *Plantarflexion: Table 37 (p. 66)= 6% (A) and 0% (B)*
- *Inversion: Table 38 (p. 67)= 1% (A) and 0% (B)*
- *Eversion: Table 38 (p. 67)= 2% (A) and 1% (B)*

Add *the above for a total hindfoot lower extremity ROM impairment:* ***9% (A) or 1% (B)***

Notice: *Range of motion on Worksheet B is essentially normal with only 1% lower extremity deficits (0% whole person) recorded for loss of 5° eversion. The motion loss documented on Worksheet A is therefore not permanent, but secondary to the edema and pain present after prolonged walking and standing.*

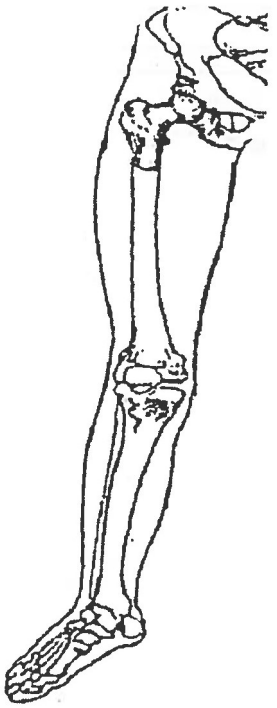
Combine *diagnostic rating* ***6% LE*** *and ROM rating* ***1% LE*** *=* ***7% LE***

Convert 7% *lower extremity rating to whole person using AMA Guides Table 46 (p. 72) =* ***3% whole person rating***

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Worksheet A- answers SIDE ☑ R ☐ L Date _____

	Abnormal Motion					List Other Disorders	Regional Impairment%	Amputation % (Table 47)
	Table 37	Dorsiflex	Plantar	Ankylosis	Impairment %	malalignment due to calcaneal fracture 8% foot = 6% LE		
Hind Foot	Angle°	**20**	**25**		**6**			
	Impairment %	**0**	**6**					
	Table 38	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°	**25**	**10**		**3**			
	Impairment %	**1**	**2**					
	Add IMP% of ROM or use largest ANK **9** [1]					**IMP% =** **6** [2]	**Combine [1] and [2] =** **14**	
	Table 39	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis:**		
Knee	Angle°							
	Impairment %							
	Add IMP% of ROM or use largest ANK _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 41,42	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis:**		
Hip	Angle°							
	Impairment %							
	Table 43	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Add Impairment% of ROM or use largest Ankylosis _____ [1]					**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

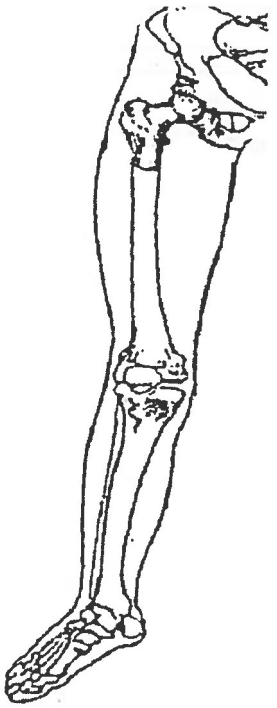
III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46) =

Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name Worksheet B- answer SIDE ☑ R ☐ L Date _____

Abnormal Motion						List Other Disorders	Regional Impairment%	Amputation % (Table 47)
	Table 37	Dorsiflex	Plantar	Ankylosis	Impairment %	malalignment due to calcaneal fracture 8% foot = 6% LE		
Hind Foot	Angle°	**20**	**40**		**0**			
	Impairment %	**0**	**0**					
	Table 38	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°	**40**	**15**		**1**			
	Impairment %	**0**	**1**					
Add IMP% of ROM or use largest ANK 1 [1]						**IMP% =** 6 [2]	**Combine [1] and [2] =** 7	
	Table 39	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis:**		
Knee	Angle°							
	Impairment %							
Add IMP% of ROM or use largest ANK _____ [1]						**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	
	Table 41,42	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis:**		
Hip	Angle°							
	Impairment %							
	Table 43	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
Add Impairment% of ROM or use largest Ankylosis _____ [1]						**IMP% =** _____ [2]	**Combine [1] and [2] =** _____	

I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot 7 % + Knee _____% + Hip _____%)

Combined total = **7%**

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: = **7%**

Impairment of Whole Person (Use Table 46) = **3%**

Worksheets

Lower Extremity Impairment Worksheet - Part I: Toes (optional worksheet)
Lower Extremity Impairment Worksheet - Part II: Hip, knee, and ankle
Apportionment Calculation Worksheet (Desk Aid 14)

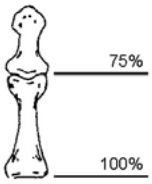
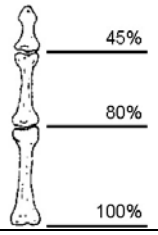
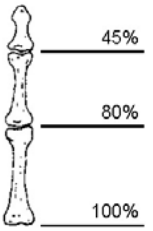
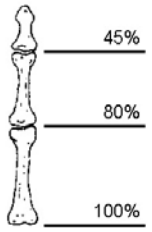
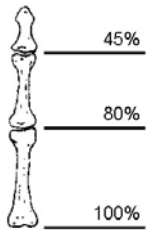
Lower Extremity Impairment Record

Part I (Foot)

Name _____

SIDE ☐ R ☐ L Date _____

Diagnosis _____

Abnormal Motion						Amputation	Other Disorders	Foot Impairment %	
Record Motion, Ankylosis and Impairment %						Mark Level & Impairment %	List Type & Impairment %	Combine Digit IMP%	
			F. T 24 p 56		ANK	IMP%			Abnormal Motion [1]	
Great Toe	**IP**	Angle°							Amputation [2]	
		IMP%								
	MP		**PF:** T 26 p 58	**DF:** T 25 p 58	ANK				Other Disorders [3]	
		Angle°							Digit Impairment % * Combine 1, 2, 3	
		IMP%								
Combine Impairment % MP+IP = _____ [1]							**IMP% =** _____ [2]	**IMP% =** _____ [3]	**Foot Impairment %** Convert via: T 27, p 59	
			PF: T 30 p 61	**DF:** T 30 p 61	ANK	IMP%			Abnormal Motion [1]	
Second Toe	**DIP**								Amputation [2]	
	PIP								Other Disorders [3]	
	MP	Angle°							Digit Impairment % * Combine 1, 2, 3	
		IMP%								
Combine Impairment % MP+PIP+DIP = _____ [1]							**IMP% =** _____ [2]	**IMP% =** _____ [3]	**Foot Impairment %** Convert via: T 34, p 64	
			PF: T 31 p 62	**DF:** T 31 p 62	ANK	IMP%			Abnormal Motion [1]	
Third Toe	**DIP**								Amputation [2]	
	PIP								Other Disorders [3]	
	MP	Angle°							Digit Impairment % * Combine 1, 2, 3	
		IMP%								
Combine Impairment % MP+PIP+DIP = _____ [1]							**IMP% =** _____ [2]	**IMP% =** _____ [3]	**Foot Impairment %** Convert via: T 34, p 64	
			PF: T 32 p 62	**DF:** T 32 p 62	ANK	IMP%			Abnormal Motion [1]	
Fourth Toe	**DIP**								Amputation [2]	
	PIP								Other Disorders [3]	
	MP	Angle°							Digit Impairment % * Combine 1, 2, 3	
		IMP%								
Combine Impairment % MP+PIP+DIP = _____ [1]							**IMP% =** _____ [2]	**IMP% =** _____ [3]	**Foot Impairment %** Convert via: T 34, p 64	
			PF: T 33 p 63	**DF:** T 33 p 63	ANK	IMP%			Abnormal Motion [1]	
Fifth Toe	**DIP**								Amputation [2]	
	PIP								Other Disorders [3]	
	MP	Angle°							Digit Impairment % * Combine 1, 2, 3	
		IMP%								
Combine Impairment % MP+PIP+DIP = _____ [1]							**IMP% =** _____ [2]	**IMP% =** _____ [3]	**Foot Impairment %** Convert via: T 34, p 64	

Foot Impairment (add great toe _____% + 2nd toe _____% + 3rd toe _____% + 4th toe _____% + 5th toe _____%)	= _____
Other Regional Foot Impairments (i.e., arthritis, fractures)	= _____
Total Foot Impairment * Combine all foot impairments	= _____
Lower Extremity Impairment: ** Convert Total Foot Impairment % To Lower Extremity Impairment %	= _____
Whole Person Impairment: *** Convert Lower Extremity % to Whole Person %	= _____

* Combined Values Chart, p 254

** Use Table 36, p 65 (Foot to Lower Extremity)

*** Use Table 46, p 72 (Lower Extremity to Whole Person)

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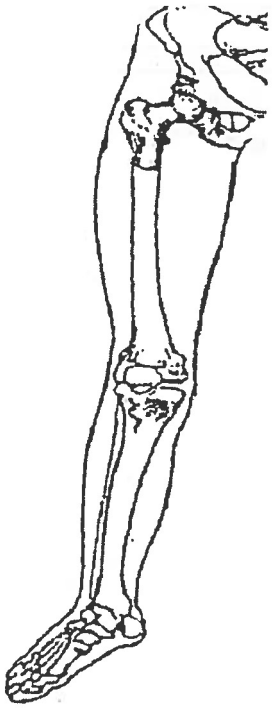
Lower Extremity Impairment Record–**Part 2 (Hind Foot, Knee & Hip)**

Name _____ SIDE R L Date _____

Abnormal Motion						List Other Disorders Table 37, p.66	Regional Impairment%	Amputation % (Table 47, p.73)
	Table 37, p.66	Dorsiflex	Plantar	Ankylosis	Impairment %			
Hind Foot	Angle°							
	Impairment %							
	Table 38, p.67	Inversion	Eversion	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
Add IMP% of ROM or use largest ANK _____					**[1]**	**IMP% =** _____ **[2]**	**Combine [1] and [2] =** _____	
	Table 39, p.68	Flexion	Extension	Ankylosis	Impairment %	**Table 40 Diagnosis: p.68**		
Knee	Angle°							
	Impairment %							
Add IMP% of ROM or use largest ANK _____					**[1]**	**IMP% =** _____ **[2]**	**Combine [1] and [2] =** _____	
	Table 41,42, p. 69 70	Flexion	Extension	Ankylosis	Impairment %	**Table 45 Diagnosis: p.72**		
Hip	Angle°							
	Impairment %							
	Table 43, p.70	Abduction	Adduction	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
	Table 44, p.70	Int Rot	Ext Rot	Ankylosis	Impairment %			
	Angle°							
	Impairment %							
Add Impairment% of ROM or use largest Ankylosis _____					**[1]**	**IMP% =** _____ **[2]**	**Combine [1] and [2] =** _____	



I. Combine all the above Impairments

(Combine Foot _____% + Hind Foot _____% + Knee _____% + Hip _____%)

Combined total =

II. Peripheral Nervous System Impairment Computations:

A. Sensation _____ B. Motor _____

Combined Sensory/Motor =

III. Peripheral Vascular System Impairment Computations: =

Total Lower Extremity Impairment: =

Impairment of Whole Person (Use Table 46, p. 72) =

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Apportionment Calculation Worksheet

Patient Name: _____

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

- ☐ No → Do NOT apportion
- ☐ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:

- ☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
- ☐ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- ☐ The previous condition is **work related** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related** and is **disabling**[2] → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related and is NOT disabling**[2] → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53				%WP
ROM				%WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				%WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Upper Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% UE	
Nerve			% UE	
Other			% UE	
Final Combined Apportioned Rating			% UE	%WP

Lower Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% LE	
Nerve			% LE	
Other			% LE	
Final Combined Apportioned Rating			% LE	%WP

Other	**Current Total**	**Previous**	**Apportioned**	
			% ext	%WP
			% ext	%WP
			% ext	%WP
Final Combined Apportioned Rating			% ext	%WP

Example:

The patient had a previous lumbar strain/sprain with Table 53 diagnostic rating of 5% and 5% ROM impairment. The current injury involves L4-5 disc herniation, unoperated. Current ROM rating is 10%. Remember for Table 53 Sections II, III and IV, the available sub values cannot be combined as these values are designed to represent progression of the disease state that has occurred. Thus, as a condition worsens, the Table 53 diagnosis changes within these sections but combining is not allowed when accounting for the patient's current impairment.

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53	IIC: 7%	IIB: 5%		2 %WP
ROM	10%	5%		5 %WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				**7** %WP

Normalization and Apportionment

Objectives:
1) Determine when normalization or apportionment is used when rating impairment.
2) Identify when to use apportionment for previous work related and non-work related cases.
3) Calculate an apportioned impairment rating for an extremity.
4) Determine the appropriate steps and tools necessary to calculate a spine impairment that includes apportionment.
5) Calculate spine range of motion for a previous work-related injury using the Evaluation of Previous Spinal ROM Impairment worksheet (Desk Aid 10).

Links/Worksheets
Apportionment Calculation Worksheet (Desk Aid 14)
Impairment Rating Tips (Desk Aid 11)
Evaluation of Previous Spinal ROM Impairment Worksheet (Desk Aid 10)
Spine Impairment Summary: Figure 84
Spine Impairment Summary: Figure 84 with apportionment

Core Content: Normalization and apportionment are two different processes that can be used when determining impairment ratings. Normalization is used for range of motion measurements and apportionment is performed when an injured worker has medical records or other objective evidence that substantiates a pre-existing impairment for the same body part.

Normalization General Principles
Normalization or "individual adjustment", can be applied for any type of rating when range of motion (ROM) measurements are documented prior to employment *or* when the contralateral extremity is uninjured but has limited ROM due to another condition, such as obesity. In this case, the adjustment to the rating is not apportionment because the impairment is not subtracted out from a previous injury.

When using normalization for ROM, remember to subtract "like from like" in the same plane of motion.

Consider the fact that the employer is not liable for ROM limitations that the employee entered the workplace with, only for those that resulted from the injury. Thus, prior valid ROM may be used to establish the patient's baseline from which to calculate the current additional impairment.

Case Example: A patient has a left knee meniscectomy due to a work-related injury. The patient has reached MMI and the physician is performing an impairment rating for the left knee. The physician obtains and documents ROM measurements for both knees as the patient is a power weightlifter and has increased muscular girth of both legs. The physician also documents that the right knee has never been injured so she can normalize the measurements. The ROM measurements are as follows with the percent of impairment indicated per AMA Guides, Table 39, p. 68:

Joint	**Extension/% impairment**	**Flexion/% impairment**
Left knee (affected)	0 degrees/0%	115 degrees/12%
Right knee (unaffected)	0 degrees/0%	120 degrees/11%

The extension measurements are identical with a zero percent impairment and they do not need to be considered for normalization. The physician normalized ROM measurements, comparing flexion of the left knee to flexion of the right knee with an impairment of 12% (left knee) minus 11% (right knee) = 1% impairment for ROM.

Additional Information for Normalization from the Division's Impairment Rating Tips:

In some cases, the contralateral joint is a better representation of the patient's pre-injury state than the *AMA Guides* population norms. The 3rd Revised Edition has little commentary on this procedure; however, the 5th Edition and the Division consider it reasonable to compare both extremities when there are specific conditions which would make the opposite, non-injured extremity serve as a better individual baseline. (This procedure is ***not an*** **apportionment procedure** as it does not reflect a prior pathologic condition with impairment; therefore, avoid using the term "apportionment" when referring to this process. This process is termed "normalization.") Therefore, when deemed appropriate, the physician may subtract the contralateral joint ROM impairment from the injured joint ROM impairment. (An example would be a patient with limited knee flexion due to obesity.) However, this subtraction should not be done if the contralateral joint has a known previous injury because that joint may not reflect the 'normal' ROM for that individual. Make sure that you explain your methodology and your rationale in your report.

Apportionment General Principles:

Apportionment is a legal term referring to the division of liability for injuries (pre-existing and current injury) as determined by the workers' compensation statute. In the medical arena, apportionment is performed by subtracting a previous impairment from the current total impairment rating for the affected body part. This is performed when an injured worker has medical records or other objective evidence that substantiates a pre-existing impairment for the same body part.

In order to apportion a previous condition, it must either be work-related or independently disabling at the time of the current injury. If the previous condition is not work-related and was not disabling at the time of the current injury, then NO apportionment can be done. (Please see Desk Aid 14 and the sections below for further details.)

Consider that 100% of the total leg equals 40% of the whole person. Employers are only liable for a total of 100% of the person or 40% of a lower extremity. Thus, a patient who suffered a previous work-related meniscus and ACL injury and was provided a 23% impairment of the lower extremity, has only 77% of the lower extremity remaining for payment from another injury. The next employer can only be liable for 77% of the lower extremity, as that is the remaining portion.

It may also be useful to consider the values for amputations when assigning impairments. An above the knee joint amputation with a functional stump is equal to 90% of the lower extremity and an amputation of the foot is equal to 70% of the lower extremity. Visualizing these concepts will assist when assigning impairments from ranges allowed in the Third Revised Edition of the AMA Guides.

Apportionment Example #1:

A patient was born without 4th and 5th digits on the right hand, but he is able to function well at his job and perform ADLs without the use of these fingers. He then suffered a 3rd digit amputation at work. Since he had congenitally lost the 4th and 5th digits, these would not be included in the impairment rating as it was not a work-related injury and there is no disability; therefore, there is no apportionment. Thus, only the 3rd digit amputation would receive a rating, which is known as a "case-specific rating."

Apportionment Example #2:

A patient suffered a 4th and 5th digit right hand amputation due to a *prior* workers' compensation injury. Thus, the patient received a monetary settlement for workers' compensation for the partial loss of the right hand with the two-digit amputation.
The *new* work-related injury is an amputation of the right 3rd digit. When computing the impairment rating, all three fingers are included in the "current total" hand rating and then the previous rating for the 4th and 5th digits would be subtracted out at the hand level. The calculated result is the "apportioned rating."

In Colorado, there is a twist to this problem as a non-work related impairment which impedes employment activities would also be apportioned. The non-work related impairment must be considered disabling in order to be apportioned.

Medical records or other objective evidence must substantiate a preexisting impairment to the same body part in order for apportionment to be calculated. An explanation of the basis of apportionment must be included in the written report.

Do not apportion if there is insufficient information about the past injury to establish an impairment. If you do not have medical records and do not feel comfortable apportioning a condition or injury, then document this in the medical record and provide a case-specific rating.

> **Attention:** Apportionment cannot be performed by estimating the percentage attributable to a prior injury or disease. Estimating the impairment without proper documentation is not acceptable. For example, "50% of the prior knee injury is due to a ski accident" cannot be apportioned.

Definitions:
Current Total: Total impairment rating for all involved body parts
Case-Specific Rating: Impairment rating for the current injury only, rating does not include previous injuries. Used for injuries which cannot be apportioned.
Independently Disabling: Includes conditions which adversely impact the patient's ability to perform their current job (work restrictions), or limit the patient's access to other jobs (permanent work restrictions).

Steps For Determining Apportionment: Complete and submit the Apportionment Calculation Worksheet (Desk Aid 14) along with any other required worksheets any time apportionment is performed. Justification for apportionment should also be included in the narrative report. Use of Desk Aid 14 will ensure compliance with C.R.S § 8-42-104 and Rule 12-3 which indicate the following steps are required in order to determine if apportionment is appropriate when calculating an impairment rating. Based on the statute, the date of the work-related injury determines how apportionment is performed.

> **Step 1:** Is there medical documentation or objective evidence of a previous condition of the same body part which would qualify for a rating?
> - No → Do NOT apportion.
> - Yes → Proceed to **Step 2** if the condition is an injury.
>
> **Step 2:** The date of the *current injury* is:
> - **Before** July 1, 2008 → Apportion - proceed to **Step 4**
> - **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- The previous condition is **work-related** → Apportion - proceed to **Step 4.**
- The previous condition is **non-work related** and is **disabling*** → Apportion - proceed to **Step 4.**
- The previous condition is **non-work related and is NOT disabling*** → No apportionment, provide a case-specific** impairment rating (includes the current injury injury only).

Step 4: Apportion by subtracting the prior impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM.

Step 5: For spinal conditions, combine the values for a whole person apportioned rating. For extremity conditions, combine the values to determine the upper or lower extremity impairment rating, and then convert from extremity units to whole person, if applicable.

*** "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other current jobs (permanent work restrictions).**

** The case-specific rating includes only the current work-related diagnosis. If prior ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case-specific rating may be individually adjusted or normalized accordingly, when appropriate.

Attention: Remember that normalization or individual adjustments are not apportionment.

Additional Information for Apportionment from the Division's Impairment Rating Tips:

Asymptomatic conditions cannot be evaluated for prior impairment. Only previously symptomatic conditions should be considered for apportionment. (Reference: Askew v. Industrial Claim Appeals Office, 927 P.2d 1333 (Colo. 1996); Rule 12).

To apportion you must create a rating of the worker's impairment *immediately prior to* the current injury using the *AMA Guides, 3rd Edition (rev.).* Subtract this rating from the current total rating at the appropriate levels.

Age: Because age is considered in the calculation of benefits which the injured worker will receive, there is no additional apportionment for age when awarding impairment ratings (Reference: C.R.S. §8-42-107).

Case Example:
Apportionment for Extremities: non-work related previous injury

Patient reports an arthroscopic partial medial meniscectomy to his right knee in 2013 due to a ski injury while he was on vacation in Utah. (Records are enclosed in the report) He reports returning to work as a carpenter without work restrictions and reports intermittent pain in the knee until his work-related injury January 3, 2016.

On January 3rd, 2016, the patient reports missing the last step while descending a ladder at work, causing his right knee to twist and buckle. Conservative care did not alleviate the pain, so an MRI was obtained, indicating a further medial meniscus tear. A meniscal allograft of the right knee was performed. He reports 80% improvement, is placed at MMI with an impairment rating to be calculated.

Using the Apportionment Calculation Worksheet, is apportionment indicated?

Apportionment Calculation Worksheet

Patient Name: _____

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

- ☐ No → Do NOT apportion
- ☐ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:

- ☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
- ☐ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- ☐ The previous condition is **work related** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related** and is **disabling[2]** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related and is NOT disabling[2]** → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53				%WP
ROM				%WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				%WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Answer: No, the previous injury is not work related and not independently disabling due to the patient indicating he returned to work without work restrictions. The impairment rating would be calculated from the current injury only. This is a case specific rating.

Case Example:
Apportionment for Extremities: work-related previous injury

Patient reports an arthroscopic partial medial meniscectomy to his right knee due to a work related injury on February 1, 2013. The patient reports he was working as a carpenter, lifting a load of 50# from floor to waist too quickly and twisted his upper body without pivoting the lower body. He states his right knee twisted and buckled, which caused a meniscus tear. The patient was placed at MMI and given an impairment rating in May 2013. The rating was 5% for the meniscectomy and 4% for ROM, equaling a total 9% lower extremity rating.
On January 3rd, 2016, patient reports missing the last step while descending a ladder at work, which caused his right knee to twist and buckle. Conservative care did not alleviate the pain, so an MRI was obtained, indicating a medial meniscus tear. The patient reports that a meniscal allograft to the right knee was performed. He reports 80% improvement, is placed at MMI with an impairment rating to be calculated.

Right knee ROM measurements:
Flexion: 130 degrees
Extension: 0 degrees

Would apportionment be indicated?
Answer: Yes, since the current injury occurred after July 1, 2008, and a past work related impairment rating was performed, apportionment is indicated.

Using the Apportionment Calculation Worksheet, what is the current impairment rating?

Apportionment Calculation Worksheet

Patient Name: _____

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

- ☐ No → Do NOT apportion
- ☐ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:

- ☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
- ☐ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- ☐ The previous condition is **work related** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related** and is **disabling[2]** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related and is NOT disabling[2]** → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53				%WP
ROM				%WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				%WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Upper Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% UE	
Nerve			% UE	
Other			% UE	
Final Combined Apportioned Rating			% UE	%WP

Lower Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% LE	
Nerve			% LE	
Other			% LE	
Final Combined Apportioned Rating			% LE	%WP

Other	**Current Total**	**Previous**	**Apportioned**	
			% ext	%WP
			% ext	%WP
			% ext	%WP
Final Combined Apportioned Rating			% ext	%WP

Example:

The patient had a previous lumbar strain/sprain with Table 53 diagnostic rating of 5% and 5% ROM impairment. The current injury involves L4-5 disc herniation, unoperated. Current ROM rating is 10%. Remember for Table 53 Sections II, III and IV, the available sub values cannot be combined as these values are designed to represent progression of the disease state that has occurred. Thus, as a condition worsens, the Table 53 diagnosis changes within these sections but combining is not allowed when accounting for the patient's current impairment.

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53	IIC: 7%	IIB: 5%		2 %WP
ROM	10%	5%		5 %WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				**7** %WP

Answer:

Lower Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM	7	4	3 % LE	
Nerve			% LE	
Other	7	5	2 % LE	
Final Combined Apportioned Rating			5 % LE	2 %WP

*Combine ROM impairment and Table 40 impairment = **5%** lower extremity impairment, which converts to **2%** whole person impairment.*

** Note: If the reported previous lower extremity impairment rating is not segmented by ROM and Table 40 rating, then subtract the past total lower extremity rating from the current total lower extremity rating.
In this case: past lower extremity impairment rating: 9%, current lower extremity impairment rating: 14% = 5% apportioned lower extremity rating.

Apportionment of spinal conditions

Each spinal area is rated separately (cervical, thoracic and lumbar). For example, a previous injury to the cervical spine cannot be used to justify apportionment on a current thoracic spine injury.

Step 1: If a previous injury *AMA Guides* Table 53 rating can be supported with objective evidence, it must be subtracted from the current total Table 53 rating. For example, if the present Table 53 diagnostic impairment is 8% and the previous Table 53 diagnostic impairment rating was 5%, then the apportioned Table 53 diagnostic impairment rating is 3%.

- The current TOTAL rating cannot be less than the previous rating.
- The 6 month time period required for the previous injury Table 53 rating can be met by cumulative or consecutive episodes.
- **Attention:** Unlike some other portions of the AMA Guides, it is not appropriate to combine impairment values within Sections II, III, or IV of Table 53. The conditions in these sections are intended to be progressive in nature. Therefore, the current Table 53 rating will naturally account for the previous impairment prior to the advancement of the pathology, and it need not be combined with the previous rating to represent the current impairment. See the case example at the end of this chapter for better understanding of this concept.

Step 2: Deduct previous range of motion impairment from *current* ROM impairment. For example, if the current ROM impairment is 10% and the previous ROM impairment was 5%, then the apportioned ROM rating is 5%.

Step 3: Combine the apportioned Table 53 impairment and ROM impairment ratings for the final apportioned spine rating. In the above case, the apportioned Table 53 rating 3% is combined with the apportioned ROM 5% rating for a total apportioned rating equalling 8%.

Step 4: Record values on Desk Aid 14 as well as the Spine Impairment Summary worksheet (Figure 84) and **submit these forms with the narrative report.**

- An alternative version of Figure 84 with room for apportionment values is available on the Division's website for use at the provider's discretion.

Apportionment of spinal conditions when past ROM is NOT available

When previous injury range of motion measurements are not available or were not taken in accordance with the *AMA Guides, 3rd Edition, revised,* use the Evaluation of Previous Spinal ROM Impairment Worksheet (Desk Aid 10) to determine the appropriate value to use as the previous ROM impairment. Then, perform apportionment in the same fashion as other spinal conditions as described above.

To determine the previous spinal ROM impairment using the Evaluation of Previous Spinal ROM Impairment Worksheet (Desk Aid 10):

Step 1: *Table A:* Establish the maximum allowable spinal deficit impairment for ROM based on the Table 53 diagnosis from the previous injury

- Pay close attention to the footnotes of Table A. In the case of multi-level fusion, the whole value on Table A is used as the ROM impairment due to the previous injury and Table B is unnecessary.

TABLE A

Maximum Allowable Spinal Deficits for Range of Motion Apportionment of Previous Injuries

	Total Apportionable Impairment Percentage for Range of Motion		
Medical Condition (using Table 53 p. 80 as a reference)	**Cervical**	**Thoracic**	**Lumbar**
Spinal Fusion[1]	14%	4%	12%
Other surgically-treated disc lesions[2]	6%	2%	5%
Other disorders rated under Table 53[3]	3%	1%	3%

[1] For one-level fusion, complete severity category rating (Table B) as directed. For a two or multi-level fusion, use the full 14%, 4% or 12% (as appropriate to the spinal region).

[2] If diskectomy is done in conjunction with fusion, rate only as indicated for the fusion.

[3] This includes all other Table 53 ratings including diagnosis for fracture, spinal stenosis, spondylolysis, spondylolistheses, or chronic pain with medically documented injury and a minimum of six months medically documented pain and rigidity with or without muscle spasm.

Step 2: *Table B:* Complete Table B to determine the severity category that best represents the patient **in the year prior to the current injury** by checking the appropriate boxes. Severity category is based on restriction in activity, number of episodes causing functional disability, time lost from work, and number of medical visits associated with the previous injury. *In the case of multi-level fusion, this step is not required.*

TABLE B
Severity Index Worksheet for Evaluation of Range of Motion Deficit from a Previous Spinal Injury[1]

Severity:	None ✓	Mild ✓	Moderate ✓	Severe ✓	Not Available ✓
Restriction in activity (work and activities of daily living) caused by previous spinal injury	Full Activity (no restrictions)	Temporary episode-related restriction	Some permanent restriction	Limited to sedentary activities	
Number of episodes within the year prior to the current injury causing functional disability	0	1	2 - 3	>3	
Time lost from work in last 12 months due to the previous injury	0	1-2 days	3-5 days	>5 days	
Medical visits (MD, DO, DC) in the last 12 months due to the previous injury	None	1-2 visits	3-6 visits	>6 visits	
Severity Index Range	0%	1-33%	34-66%	67-100%	

[1] This table only applies when the previous injury occurred in the same spinal area—cervical, thoracic or lumbar—as the work-related injury being rated.

Step 3: Calculate the apportionable ROM impairment by multiplying the percentage from *Table A* times the percentage from *Table B* to determine the range of motion impairment for the previous injury. This value is then used as the Previous ROM impairment on the Apportionment Calculation Worksheet (Desk Aid 14) and apportionment is performed as described under the "Apportionment of Spinal Conditions" section above.

- Round 0.5% or higher up and less than 0.5% down.

Calculation of Apportionable ROM

Regional Impairment Percentage _____% (Table A) x Severity Index (if applicable) _____% (Table B)

= _____% ROM Impairment due to previous injury*

*Use this value as Previous ROM Impairment on Apportionment Calculation Worksheet for spinal conditions. Round 0.5% up to the next whole number, less than 0.5% down to the nearest whole number.

Case Example:

Patient is a mechanic who reports a work-related injury in May of 2011, with a diagnosis of L4-5 strain. The patient reports rehabilitation for 8 months after the injury and reports minimal residual problems after the treatments. He states he has lost 2-3 days in the last year due to lumbar pain and has sought chiropractic treatment twice last year. Patient states he has been able to work without restrictions when the back pain episodes began. He reports an impairment rating was performed but there are no records to indicate the ROM impairment or final impairment rating.

The patient's current injury is a work-related L4-5 disc herniation with a discectomy. The patient reports success with the surgery with no residual signs or symptoms. His ROM impairment is calculated as 7%.

1. ***Determine the Table 53 impairment rating for the previous injury.***

Answer: *AMA Guides Table 53 IIB:* ***5%.*** *Unoperated lumbar strain with more than 6 months of documented treatment and minimal residual problems.*

2. ***Determine the current total Table 53 impairment rating.***

Answer: *AMA Guides Table 53 II D:* ***8%****. One level surgically treated disc lesion without residual signs or symptoms. Unlike some other portions of the Guides, it is not appropriate to combine 5% and 8% to arrive at the current total rating. In Table 53, Section II, the current total rating of 8% encompasses both the strain and the surgery by using the higher of the two ratings. Remember, the highest value within each Section of Table 53 must be used.*

3. ***Using the Evaluation of Previous Spinal ROM Impairment worksheet (Desk Aid 10), what is the % ROM impairment due to the previous injury?***

DEPARTMENT OF LABOR AND EMPLOYMENT
Division of Workers' Compensation

EVALUATION OF PREVIOUS SPINAL ROM IMPAIRMENT

For use in apportionment of spinal conditions when no previous injury ROM measurements or impairment rating exist to accompany a previous injury Table 53 rating. A previous injury Table 53 rating is required to proceed with rating previous ROM impairment.

If the patient has previous injury spinal range of motion measurements taken consistent with the AMA Guides 3rd edition (revised), the impairment from those measurements should be subtracted from the ROM impairment calculated for the current spinal injury and this worksheet should not be used.

INSTRUCTIONS:

1. First, the physician must establish the maximum allowable spinal deficit impairment for ROM apportionment of the **previous injury** using **Table A**. Pay attention to footnotes associated with each condition. Remember that a minimum of 6 months of medically documented pain and rigidity with or without muscle spasm may be required to support certain Table 53 impairment ratings.

2. The physician completes **Table B** to determine the severity category (none, mild, moderate or severe) that best represents the state of the patient **in the year prior to the current injury**, except in the case of a multi-level fusion (see Table A footnotes). In many cases, all of the information in Table B may not be available. In that case, indicate the information that is missing on Table B and determine the severity category from the available information. Each severity category in Table B has an associated Severity Index Range. After you have determined the appropriate severity category, determine a Severity Index percentage from that category that you believe best represents the patient.

3. Calculate the Previous Spinal ROM Impairment percentage using the **Calculation of Apportionable ROM** section at the end of this worksheet.

4. **Submit completed worksheet** with any other required worksheets.

TABLE A

Maximum Allowable Spinal Deficits for Range of Motion Apportionment of Previous Injuries

	Total Apportionable Impairment Percentage for Range of Motion		
Medical Condition (using Table 53 p. 80 as a reference)	**Cervical**	**Thoracic**	**Lumbar**
Spinal Fusion[1]	14%	4%	12%
Other surgically-treated disc lesions[2]	6%	2%	5%
Other disorders rated under Table 53[3]	3%	1%	3%

[1] For one-level fusion, complete severity category rating (Table B) as directed. For a two or multi-level fusion, use the full 14%, 4% or 12% (as appropriate to the spinal region).

[2] If diskectomy is done in conjunction with fusion, rate only as indicated for the fusion.

[3] This includes all other Table 53 ratings including diagnosis for fracture, spinal stenosis, spondylolysis, spondylolistheses, or chronic pain with medically documented injury and a minimum of six months medically documented pain and rigidity with or without muscle spasm.

TABLE B

Severity Index Worksheet for Evaluation of Range of Motion Deficit from a Previous Spinal Injury[1]

Severity:	**None** ✓	**Mild** ✓	**Moderate** ✓	**Severe** ✓	**Not Available** ✓
Restriction in activity (work and activities of daily living) caused by previous spinal injury	Full Activity (no restrictions)	Temporary episode-related restriction	Some permanent restriction	Limited to sedentary activities	
Number of episodes within the year prior to the current injury causing functional disability	0	1	2 - 3	>3	
Time lost from work in last 12 months due to the previous injury	0	1-2 days	3-5 days	>5 days	
Medical visits (MD, DO, DC) in the last 12 months due to the previous injury	None	1-2 visits	3-6 visits	>6 visits	
Severity Index Range	0%	1-33%	34-66%	67-100%	

[1] This table only applies when the previous injury occurred in the same spinal area—cervical, thoracic or lumbar—as the work-related injury being rated.

Calculation of Apportionable ROM

Regional Impairment Percentage _____% (Table A) x Severity Index (if applicable) _____% (Table B)

= _____% ROM Impairment due to previous injury*

*Use this value as Previous ROM Impairment on Apportionment Calculation Worksheet for spinal conditions. Round 0.5% up to the next whole number, less than 0.5% down to the nearest whole number.

Answer:
Table A: Lumbar (other disorders): 3% (from pre-injury diagnosis): Footnote 3 at bottom of chart: "This includes all other Table 53 ratings including diagnosis for fracture, spinal stenosis, spondylolysis, spondylolisthesis, or chronic pain with medically documented injury and a minimum of six months medically documented pain and rigidity with or without muscle spasm".

Table B: Mild:1-33% range, picked 20%

Calculation of Apportionable ROM: 3% (Table A) x 20% (Table B) ***= 0.6%, which rounds to 1% ROM impairment from previous injury.***

DEPARTMENT OF LABOR AND EMPLOYMENT
Division of Workers' Compensation

EVALUATION OF PREVIOUS SPINAL ROM IMPAIRMENT

For use in apportionment of spinal conditions when no previous injury ROM measurements or impairment rating exist to accompany a previous injury Table 53 rating. A previous injury Table 53 rating is required to proceed with rating previous ROM impairment.

If the patient has previous injury spinal range of motion measurements taken consistent with the AMA Guides 3rd edition (revised), the impairment from those measurements should be subtracted from the ROM impairment calculated for the current spinal injury and this worksheet should not be used.

INSTRUCTIONS:

1. First, the physician must establish the maximum allowable spinal deficit impairment for ROM apportionment of the **previous injury** using **Table A**. Pay attention to footnotes associated with each condition. Remember that a minimum of 6 months of medically documented pain and rigidity with or without muscle spasm may be required to support certain Table 53 impairment ratings.

2. The physician completes **Table B** to determine the severity category (none, mild, moderate or severe) that best represents the state of the patient **in the year prior to the current injury**, except in the case of a multi-level fusion (see Table A footnotes). In many cases, all of the information in Table B may not be available. In that case, indicate the information that is missing on Table B and determine the severity category from the available information. Each severity category in Table B has an associated Severity Index Range. After you have determined the appropriate severity category, determine a Severity Index percentage from that category that you believe best represents the patient.

3. Calculate the Previous Spinal ROM Impairment percentage using the **Calculation of Apportionable ROM** section at the end of this worksheet.

4. **Submit completed worksheet** with any other required worksheets.

TABLE A

Maximum Allowable Spinal Deficits for Range of Motion Apportionment of Previous Injuries

	Total Apportionable Impairment Percentage for Range of Motion		
Medical Condition (using Table 53 p. 80 as a reference)	**Cervical**	**Thoracic**	**Lumbar**
Spinal Fusion[1]	14%	4%	12%
Other surgically-treated disc lesions[2]	6%	2%	5%
Other disorders rated under Table 53[3]	3%	1%	**3%**

[1] For one-level fusion, complete severity category rating (Table B) as directed. For a two or multi-level fusion, use the full 14%, 4% or 12% (as appropriate to the spinal region).

[2] If diskectomy is done in conjunction with fusion, rate only as indicated for the fusion.

[3] This includes all other Table 53 ratings including diagnosis for fracture, spinal stenosis, spondylolysis, spondylolistheses, or chronic pain with medically documented injury and a minimum of six months medically documented pain and rigidity with or without muscle spasm.

TABLE B
Severity Index Worksheet for Evaluation of Range of Motion Deficit from a Previous Spinal Injury[1]

Severity:	**None** ✓	**Mild** ✓	**Moderate** ✓	**Severe** ✓	**Not Available** ✓
Restriction in activity (work and activities of daily living) caused by previous spinal injury	Full Activity (no restrictions)	Temporary episode-related restriction	Some permanent restriction	Limited to sedentary activities	
Number of episodes within the year prior to the current injury causing functional disability	0	1	2 - 3	>3	✓
Time lost from work in last 12 months due to the previous injury	0	1-2 days ✓	3-5 days	>5 days	
Medical visits (MD, DO, DC) in the last 12 months due to the previous injury	None	1-2 visits ✓	3-6 visits	>6 visits	
Severity Index Range	0%	1-33% ✓	34-66%	67-100%	

[1] This table only applies when the previous injury occurred in the same spinal area—cervical, thoracic or lumbar—as the work-related injury being rated.

Calculation of Apportionable ROM

Regional Impairment Percentage _3_ % (Table A) x Severity Index (if applicable) _20_ % (Table B)

= _1_ % ROM Impairment due to previous injury*

*Use this value as Previous ROM Impairment on Apportionment Calculation Worksheet for spinal conditions. Round 0.5% up to the next whole number, less than 0.5% down to the nearest whole number.

4. ***Using Apportionment Calculation Worksheet (Desk Aid 14), calculate the final apportioned spine impairment rating.***

Apportionment Calculation Worksheet

Patient Name: _____

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

- ☐ No → Do NOT apportion
- ☐ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:

- ☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
- ☐ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- ☐ The previous condition is **work related** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related** and is **disabling[2]** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related and is NOT disabling[2]** → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53				%WP
ROM				%WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				%WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Upper Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% UE	
Nerve			% UE	
Other			% UE	
Final Combined Apportioned Rating			% UE	%WP

Lower Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% LE	
Nerve			% LE	
Other			% LE	
Final Combined Apportioned Rating			% LE	%WP

Other	**Current Total**	**Previous**	**Apportioned**	
			% ext	%WP
			% ext	%WP
			% ext	%WP
Final Combined Apportioned Rating			% ext	%WP

Example:

The patient had a previous lumbar strain/sprain with Table 53 diagnostic rating of 5% and 5% ROM impairment. The current injury involves L4-5 disc herniation, unoperated. Current ROM rating is 10%. Remember for Table 53 Sections II, III and IV, the available sub values cannot be combined as these values are designed to represent progression of the disease state that has occurred. Thus, as a condition worsens, the Table 53 diagnosis changes within these sections but combining is not allowed when accounting for the patient's current impairment.

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53	IIC: 7%	IIB: 5%		2 %WP
ROM	10%	5%		5 %WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				**7** %WP

Answer:
Table 53: 8% - 5% = 3%
ROM: 7% - 1% = 6%
Combine 6% and 3% for Final Combined Apportioned Rating of 9% Whole Person Impairment.

Apportionment Calculation Worksheet

Patient Name: Apportionment Case Example

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

☐ No → Do NOT apportion
☑ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:
☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
☑ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

☑ The previous condition is **work related** → Apportion - proceed to **Step 4**
☐ The previous condition is **non-work related** and is **disabling**[2] → Apportion - proceed to **Step 4**
☐ The previous condition is **non-work related and is NOT disabling**[2] → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53	8	5		3 %WP
ROM	7	1		6 %WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				9 %WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Worksheets

Apportionment Calculation Worksheet (Desk Aid 14)
Evaluation of Previous Spinal ROM Impairment Worksheet (Desk Aid 10)
Spine Impairment Summary: Figure 84
Spine Impairment Summary Sheet with Apportionment (Figure 84)

Figure 84. Spine Impairment Summary

Impairment	Cervical	Thoracic	Lumbar
1. Due to Specific Disorders (Table 53 or Table 54)			
2. Range of Motion			
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength			
4. Other–From Sec. 3.4 p. 101			
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)			
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)			

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	% Impairment	*Guides* Page No.
a.		
b.		
c.		
d.		
e.		

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

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Apportionment Calculation Worksheet

Patient Name: _____

Date of Injury: _____

Step 1: Is there medical documentation or objective evidence of a previous condition of the same body part that would qualify for a rating?

- ☐ No → Do NOT apportion
- ☐ Yes → Proceed to **Step 2** if the condition is an injury . If it is an occupational disease see footnote.[1]

Step 2: The date of the *current injury* is:

- ☐ **Before** July 1, 2008 → Apportion - proceed to **Step 4**
- ☐ **After** July 1, 2008 → Proceed to **Step 3**

Step 3:

- ☐ The previous condition is **work related** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related** and is **disabling[2]** → Apportion - proceed to **Step 4**
- ☐ The previous condition is **non-work related and is NOT disabling[2]** → No apportionment, provide a case specific impairment[3] rating (includes the current injury only) - refer to complete impairment report

Step 4: Apportion by subtracting the previous impairment rating from the current total rating. The current total rating includes the previous condition and current condition. Preferably subtracting like from like, i.e. ROM from ROM

Step 5: Current apportioned rating:

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53				%WP
ROM				%WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				%WP

[1] If the condition is an occupational disease, directly proceed to apportionment. We suggest consulting an expert as occupational disease conditions are apportioned using different standards.

[2] "Disabled" requires information that the prior injury was identified, treated and independently disabling at the time of the current injury. Disabled includes conditions which adversely impact the patient's ability to perform their job (work restrictions), or limits the patient's access to other jobs (permanent work restrictions)

[3] The case specific rating includes only the current work related diagnosis. If pre-injury ROM measurements are available, or the opposite pre-injury limb has no pathology, the ROM portion of the case specific rating may be individually adjusted or normalized accordingly, when appropriate.

Upper Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% UE	
Nerve			% UE	
Other			% UE	
Final Combined Apportioned Rating			% UE	%WP

Lower Extremity "subtract like from like"	**Current Total**	**Previous**	**Apportioned**	
ROM			% LE	
Nerve			% LE	
Other			% LE	
Final Combined Apportioned Rating			% LE	%WP

Other	**Current Total**	**Previous**	**Apportioned**	
			% ext	%WP
			% ext	%WP
			% ext	%WP
Final Combined Apportioned Rating			% ext	%WP

Example:

The patient had a previous lumbar strain/sprain with Table 53 diagnostic rating of 5% and 5% ROM impairment. The current injury involves L4-5 disc herniation, unoperated. Current ROM rating is 10%. Remember for Table 53 Sections II, III and IV, the available sub values cannot be combined as these values are designed to represent progression of the disease state that has occurred. Thus, as a condition worsens, the Table 53 diagnosis changes within these sections but combining is not allowed when accounting for the patient's current impairment.

Spine	**Current Total**	**Previous**	**Apportioned**	
Table 53	IIC: 7%	IIB: 5%		2 %WP
ROM	10%	5%		5 %WP
Nerve (Convert Extremity to WP)	% ext	% ext	% ext	%WP
Final Combined Apportioned Rating				**7** %WP

DEPARTMENT OF LABOR AND EMPLOYMENT
Division of Workers' Compensation

EVALUATION OF PREVIOUS SPINAL ROM IMPAIRMENT

For use in apportionment of spinal conditions when no previous injury ROM measurements or impairment rating exist to accompany a previous injury Table 53 rating. A previous injury Table 53 rating is required to proceed with rating previous ROM impairment.

If the patient has previous injury spinal range of motion measurements taken consistent with the AMA Guides 3rd edition (revised), the impairment from those measurements should be subtracted from the ROM impairment calculated for the current spinal injury and this worksheet should not be used.

INSTRUCTIONS:

1. First, the physician must establish the maximum allowable spinal deficit impairment for ROM apportionment of the **previous injury** using **Table A**. Pay attention to footnotes associated with each condition. Remember that a minimum of 6 months of medically documented pain and rigidity with or without muscle spasm may be required to support certain Table 53 impairment ratings.

2. The physician completes **Table B** to determine the severity category (none, mild, moderate or severe) that best represents the state of the patient **in the year prior to the current injury**, except in the case of a multi-level fusion (see Table A footnotes). In many cases, all of the information in Table B may not be available. In that case, indicate the information that is missing on Table B and determine the severity category from the available information. Each severity category in Table B has an associated Severity Index Range. After you have determined the appropriate severity category, determine a Severity Index percentage from that category that you believe best represents the patient.

3. Calculate the Previous Spinal ROM Impairment percentage using the **Calculation of Apportionable ROM** section at the end of this worksheet.

4. **Submit completed worksheet** with any other required worksheets.

TABLE A

Maximum Allowable Spinal Deficits for Range of Motion Apportionment of Previous Injuries

	Total Apportionable Impairment Percentage for Range of Motion		
Medical Condition (using Table 53 p. 80 as a reference)	**Cervical**	**Thoracic**	**Lumbar**
Spinal Fusion[1]	14%	4%	12%
Other surgically-treated disc lesions[2]	6%	2%	5%
Other disorders rated under Table 53[3]	3%	1%	3%

[1] For one-level fusion, complete severity category rating (Table B) as directed. For a two or multi-level fusion, use the full 14%, 4% or 12% (as appropriate to the spinal region).

[2] If diskectomy is done in conjunction with fusion, rate only as indicated for the fusion.

[3] This includes all other Table 53 ratings including diagnosis for fracture, spinal stenosis, spondylolysis, spondylolistheses, or chronic pain with medically documented injury and a minimum of six months medically documented pain and rigidity with or without muscle spasm.

TABLE B

Severity Index Worksheet for Evaluation of Range of Motion Deficit from a Previous Spinal Injury[1]

Severity:	**None** ✓	**Mild** ✓	**Moderate** ✓	**Severe** ✓	**Not Available** ✓
Restriction in activity (work and activities of daily living) caused by previous spinal injury	Full Activity (no restrictions)	Temporary episode-related restriction	Some permanent restriction	Limited to sedentary activities	
Number of episodes within the year prior to the current injury causing functional disability	0	1	2 - 3	>3	
Time lost from work in last 12 months due to the previous injury	0	1-2 days	3-5 days	>5 days	
Medical visits (MD, DO, DC) in the last 12 months due to the previous injury	None	1-2 visits	3-6 visits	>6 visits	
Severity Index Range	0%	1-33%	34-66%	67-100%	

[1] This table only applies when the previous injury occurred in the same spinal area—cervical, thoracic or lumbar—as the work-related injury being rated.

Calculation of Apportionable ROM

Regional Impairment Percentage _____% (Table A) x Severity Index (if applicable) _____% (Table B)

= _____% ROM Impairment due to previous injury*

*Use this value as Previous ROM Impairment on Apportionment Calculation Worksheet for spinal conditions. Round 0.5% up to the next whole number, less than 0.5% down to the nearest whole number.

Figure 84. Spine Impairment Summary

Impairment	Current			Prior	Apportioned
	Cervical	**Thoracic**	**Lumbar**		
1. Due to Specific Disorders (Table 53 or Table 54)					
2. Range of Motion					
3. Neurologic System: Loss of Sensation With or Without Pain Loss of Strength					
4. Other–From Sec. 3.4 p. 101					
5. Regional Impairment Total (Combine impairments in each column using the combined values Chart p. 254)					
6. Spine Impairment Total (Combine all regional totals using the Combined Values Chart)					

7. Impairment(s) of other organ systems: for each impairment list condition, page number in *Guides*, and percentage of impairment.

Impaired System	Guides Page No.	Current Impairment	Prior	Apportioned
a.				
b.				
c.				
d.				
e.				

8. Impairment of Whole Person–use Combined Values Chart to combine spine impairment with the impairment(s) listed in 7 above. If several impairments are listed, combine spine impairment with the larger or largest value, then combine the resulting percentage with any other value(s), until all the listed impairments have been accounted for.

   Total whole person impairment: _____

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Mental Impairment Ratings

AMA Guides, 3rd Edition, revised - Chapter 14 (p. 235)

Objectives:

1. Identify the information necessary to complete a thorough assessment in order to determine a mental impairment rating.
2. Determine the steps for performing a mental impairment rating, including rating the Areas of Function.
3. Discuss overlapping of psychiatric disorders with other impairments due to physical function or neurologic impairment.

Summary/Steps for Determining Mental Impairment Ratings

1. Assess causality and response to psychiatric treatment.
2. Confirm the psychiatric diagnosis using the Diagnostic Statistical Manual (DSM) or International Classification of Diseases (ICD) and record the diagnosis on the Mental Impairment Worksheet Section I.
3. Establish maximum medical improvement (MMI).
4. Explain the nature and purpose of the impairment examination to the worker.
5. Interview the patient to determine *pre-injury baseline* and *current level of impairment* in the Areas of Function assessment categories below. The mental status of a worker at the time of injury is the baseline from which to evaluate impairment.
    - ADLs;
    - Social Functioning;
    - Thinking, concentration, and judgment;
    - Adaptation to stress.
6. Rank the level of impairment for Areas of Function and document in Section III (Areas of Function) on the Mental Impairment Worksheet.
7. If a rating is being considered under the thinking, concentration, and judgment section, make sure there is no overlap with neurological or other chapters of the *AMA Guides*.
8. Average the highest of the two values from each of the four Areas of Function in Section III on the Mental Impairment Worksheet.
9. Average the two highest ratings from Section III (Areas of Function) and document in Section IV (Final Calculations) on the Mental Impairment Worksheet.

10. It may be appropriate to add or subtract up to 0.5 from the final calculation due to examination reliability including psychological testing, socio-cultural factors and compliance with treatment. Document on the appropriate line in Section IV (Final Calculations) on the Mental Impairment Worksheet.
11. Use the Category Conversion Table on page 6 of the Mental Impairment Worksheet. Convert the final number to a percentage for the overall permanent impairment rating and document in Section IV (Final Calculations) on the Mental Impairment Worksheet.
12. If the patient has a *zero* impairment according to the above criteria and requires continuing medication for their DSM diagnosis, an impairment of 1-3% may be assigned and documented in Section V on the Mental Impairment Worksheet.
13. Document the *total impairment rating* by **combining** the total whole person *physical* impairment (if applicable) and *mental* impairment in Section VI (Total Impairment Rating) on the Mental Impairment Worksheet.

References/Links

Mental Impairment Worksheet
Guidelines for Assessing and Rating Areas of Function on the Mental Impairment Rating Worksheet

Core Content: The workers' compensation psychiatric examination is more specialized than a general psychiatric examination because the examiner must assess causality, the course of the illness and the response to psychiatric treatment, in addition to a work-related diagnosis. Only those psychiatric diagnoses classified in the latest versions of the Diagnostic Statistical Manual (DSM) or International Classification of Diseases (ICD) can be attributable to a work injury.

Mental Impairment Rating General Principles

The mental status of a worker at the time of the injury is the baseline from which to evaluate impairment for every worker. The first step in providing a mental impairment rating is determining causality, which confirms the injury caused the mental disorder or the need for treatment.

Psychiatric Diagnosis:

A psychiatric diagnosis must be assigned when providing an impairment rating for the injured worker. The medical provider must provide a DSM or ICD diagnosis and *avoid using unspecified or other mental disorders due to a medical condition (personality or somatic disorders) or pain disorder diagnosis.*

History of Impairment and Psychiatric Treatments:

The provider must take into account the history of psychiatric disorders and treatments when calculating the final impairment. Consider whether the diagnosis is chronic and what treatments will be required to maintain maximum medical improvement. *Assume that a permanent psychiatric impairment may require long-term maintenance treatment.*

Isolated Psychiatric Impairment:

Under Colorado Law, mental impairment or disability can only be compensated if it occurs under the following three circumstances:

1. With a work-related physical injury, or
2. "As a result of an accidental injury arising out of and in the course of employment when the accidental injury involves no physical injury and consists of a psychologically **traumatic event** that is generally **outside of a worker's usual experience** and would evoke significant symptoms of distress in a **worker in similar circumstances**" §8-41-301(2)(a), C.R.S.
3. Effective July 1, 2018 under §8-41-301(3)(II), if a worker experiences a psychologically traumatic event, which includes an event that is within a worker's usual experience only when the worker is *diagnosed with post-traumatic stress disorder* by a licensed psychiatrist or psychologist after the worker experienced exposure to one or more of the following events:
    - Worker is subject to an attempt by another person to cause serious bodily injury or death through the use of deadly force.
    - Worker visually witnesses death or the immediate aftermath of death of one or more people as the result of a violent event.
    - Worker repeatedly visually witnesses the serious bodily injury, or the immediate aftermath of the serious bodily injury, of one or more people as the result of the intentional act of another person or an accident.

The statute limits the amount of compensation for permanent impairment of mental conditions except in cases of occupational disease with neurological brain damage or victims of violent crime or physical injury §8-41-301(2)(b), C.R.S. Therefore, physicians should specifically address the presence of occupational neurological brain damage in their narrative report.

The Psychiatric Examination:

The examiner should explain the nature and purpose of the examination to the injured worker at the initial visit. An open-ended interview style is recommended. The rapport essential to conducting an accurate psychiatric rating may be difficult to establish because the worker may presume the clinician is biased about the examination. When the patient is being interviewed, the clinician should note the patient's general posture and issues of candor, openness, disclosure, defensiveness, and resistance.

The examination includes the following sections:

- Description of causal work event;;
- History of immediate or ensuing physical injury
- History of immediate emotional impact and ensuing psychiatric disorder (emotional injuries);
- Review the worker's basic psychological development to establish baseline levels for areas of function (ADLs, social functioning, adaptation to stress, thinking, concentration and judgment) including:
    - composition of nuclear family including birthplace;
    - relationships with family members or those with significant influence;
    - performance in school including highest level of education; and
    - social adjustment growing up;
- Alcohol and /or drug use;
- History of emotional, physical or sexual abuse;
- Past psychiatric history;
- Detailed occupational history;
- Legal history (previous workers' compensation claims, motor vehicle accidents and litigations);
- Current adjustment consisting of a detailed description of a typical day from getting up to going to bed;
- Detailed descriptions of sleep, sex, and other ADLs;
- Detailed description of current enjoyable activities including social relationships and communications during the day;
- Description of how the work injury has affected the worker's life; and
- Mental status examination, including:
    - Complete description of appearance, general behavior, and demeanor;
    - assessment of affect, mood, cognition and thought processes; and
    - detailed description of how the patient got to the examiner's office may help in describing cognitive function.

Determination of Maximum Medical Improvement (MMI):
Workers who have not received medically necessary and appropriate treatment are not at MMI (i.e. assessment of whether maximal doses of medications and psychiatric therapy have been effective to abate symptoms before determination of psychiatric MMI.).

Psychological Tests
Psychological tests may aid in establishing a *diagnosis* but not for impairment rating. Authorized treating physicians should consider using standardized, screening tools for depression, anxiety, insomnia, and other work-related symptoms for determination of a psychiatric evaluation.
Standardized tests may include:

- MMPI-2 (Minnesota Multiphasic Personality Inventory - 2nd Ed.)
    - Useful in establishing diagnosis and chronicity
- BHI ™2 (Battery for Health Improvement, 2nd Ed.) and MBMD (Millon Behavioral Medical Diagnostic)
    - Useful for evaluating coping skills, depression, psychosocial factors affecting pain
- Other tests listed in the Division's Chronic Pain Medical Treatment Guidelines
    a) Tests for Psychosis:
        - Rorschach,
        - Thematic Apperception Test (TAT)

    b) Tests for Closed Head Injury - to aid in determining brain function deficiencies
        - Halstead-Reitan,
        - Luria-Nebraska,
        - other neuropsychological tests in the Division's Traumatic Brain Injury Medical Treatment Guidelines.

Division of Workers' Compensation Mental Impairment Rating System with Use of the Mental Impairment Rating Worksheet

1. The first step for calculating the mental impairment rating is to utilize the Mental Impairment Worksheet and document the diagnosis in Section I (DSM Diagnosis).

2. The Areas of Function are assessed and documented on the Mental Impairment Worksheet under Section III (Areas of Function).

The Division of Workers' Compensation (DOWC) has adopted the Social Security Assessment Methods for assessing the severity of mental impairments, which have been adopted by the *AMA Guides.* These assessment categories are defined as Areas of Function and include:

- ADLs (sexual function and sleep);
- social functioning (interpersonal relationships, effective communication with others, recreational activities);
- thinking, concentration, and judgment; and
- adaptation to stress (set realistic short and long-term goals, perform activities on schedule, adapt to job performance requirements).

3. Determine the numerical rating for each of the categories under the four Areas of Function using the "Guidelines for Assessing and Rating Areas of Function" found at the end of this chapter and in the preceding pages.

4. Average the highest of the two values from each of the four Areas of Function in Section III on the Mental Impairment Worksheet.

5. Average the two highest ratings from Section III (Areas of Function) and document in Section IV (Final Calculations) on the Mental Impairment Worksheet.

6. It may be appropriate to add or subtract up to 0.5 from the final calculation due to examination reliability including psychological testing, socio-cultural factors and compliance with treatment. Document on the appropriate line in Section IV (Final Calculations) on the Mental Impairment Worksheet.

7. Use the Category Conversion Table on page 6 of the Mental Impairment Worksheet. Convert the final number to a percentage for the overall permanent impairment rating and document in Section IV (Final Calculations) on the Mental Impairment Worksheet.

8. If the patient has a *zero* impairment according to the above criteria and requires continuing medication for their DSM diagnosis, an impairment of 1-3% may be assigned and documented in Section V on the Mental Impairment Worksheet.

9. Document the *total impairment rating* by **combining** the total whole person *physical* impairment (if applicable) and *mental* impairment in Section VI (Total Impairment Rating) on the Mental Impairment Worksheet. Document this value on the appropriate line under Section IV.

Rating Areas of Function:

The Areas of Function refer to the following category ratings on a scale of 0-4 or 0-6. It can be useful to think of these categories from the point of view of a casual observer. For example, changes in a patient's mental well-being may constitute a minimal impairment, which is difficult to observe, while a mild degree of impairment is obvious to most observers.

Keep the following chart in mind when computing impairments, especially when subcategories of the Areas of Function are not defined.

- Category 1, minimal degree of impairment, is generally considered a change in a patient, which is not always obvious to casual observers.
- Category 2, mild degree of impairment, indicates there is some change in a patient and is obvious to most observers.
- Category 3, moderate degree of impairment, indicates that most observers can see a change in function and some modification is needed.
- Category 4, marked degree of impairment, indicates that punitive measures have been taken.
- Categories 5 and 6, extreme and maximum impairment, are uncommon and rarely used in the workers' compensation system.

Category Definition Guidelines for Areas of Function on the Mental Impairment Worksheet

Category	Degree of Impairment	Definition
0	No Impairment	Mental symptoms arising from the work-related psychiatric diagnosis have been absent for the past month. ADLs are not affected. Functioning is at pre-injury baseline in social and work activities in all areas; no more than everyday problems.
1	Minimal	Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, minimally impair functioning.
2	Mild	Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, and are mildly impairing. ADLs are mildly disrupted. Functioning show mild permanent impairment in social or work activities.
3	Moderate	Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are moderately impairing. ADLs are moderately disrupted. Functioning shows moderate permanent impairment. Activities sometimes need direction or supervision.
4	Marked	Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are seriously impairing. ADLs are seriously disrupted. Functioning shows serious difficulties in social or work activities.
5	Extreme	Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are incapacitating. At times, ADLs require structuring. Functioning is quite poor, unsafe in work settings, at times requires hospitalization or full-time supervision. Most activities require directed care.
6	Maximum	This impairment level precludes useful functioning in all areas. These individuals are generally appropriate for institutionalized settings, if available. All activities require directed care.

Areas of Function: The tables below outline the Areas of Function in four different subcategories:

- ADLs,
- social functioning,
- adaptation to Stress.

The number column indicates the value associated with the level of impairment, which is documented on the Mental Impairment Worksheet, Section III (Areas of Function).

Activities of Daily Living
Sexual Impairments*

Baseline	**0**	First determine the usual frequency, responsiveness (orgasms, erections, ejaculations) and degree of enjoyment of sex before the injury.
Minimal	**1**	Rarely initiates but can usually climax (female)/erection (male). Frequency is equal to slightly less than baseline frequency.
Mild	**2**	Has sex once per month (baseline is once per week) in response to partner and can occasionally reach orgasm (female)/usually ejaculate (male). Still derives pleasure/enjoyment from sexual activity.
Moderate	**3**	Has sex once every two months or longer (baseline once per week) in response to partner and rarely reaches orgasm (female)/has occasional erectile dysfunction (male). Rarely experiences pleasure/enjoyment.
Marked	**4**	Has no interest in sex and is without orgasms (female)/always has difficulty with erections (male) and avoids sex.

*Alterations in the sexual function due to pain is included in the physical impairment rating, and not rated under psychiatric impairment.

Activities of Daily Living
Sleep*

Baseline	**0**	First, demonstrate the usual sleep pattern and whether they used medications before the injury.
Minimal	**1**	Has trouble falling asleep most nights but can sleep through the night. If now on medication and not before the injury, the individual is at least minimally impaired.
Mild	**2**	Awakens twice during the night but can usually fall back to sleep in less than one hour.
Moderate	**3**	Has difficulty falling asleep and wakes up one to two times per night but is usually unable to fall back to sleep for several hours.
Marked	**4**	Can't get to sleep for more than two hours at a time and regularly naps during the daytime (disturbed diurnal pattern).

*****Alterations in sleep patterns due to pain is included in the physical impairment rating, and not rated under psychiatric impairment.

Social Functioning
Interpersonal Relationships

Baseline	**0**	First, determine the individual's usual openness to others and how often they greeted others, made new friends, and tolerated disagreements with others without behavioral extremes or adapted to get along with others.
Minimal	**1**	Can still initiate and meet new people and behave appropriately but feels uncomfortable and would prefer to be alone. There are less frequent social contacts but they still respond when others initiate or negotiate. Can still adapt to others when they have to. May raise voice or shout in response to interpersonal conflicts more frequently than usual.
Mild	**2**	The only social contacts are initiated by others and with some coaxing; rarely initiates social contacts and resents negotiating and compromising but still can adapt; can still enjoy some social experiences but not frequently. Can be verbally abusive when faced with interpersonal conflict.
Moderate	**3**	Requires pressure or necessity to have social contacts and rarely enjoys it, difficulty compromising, negotiating, and adapting but still can for very important purposes. Or at least one episode of physically threatening or abusive behavior directed at a person.
Marked-Extreme	**4-5**	Has no interest in others and actively avoids interactions. Derives no social pleasure and finds it difficult to adapt to others even when there are dire consequences for not compromising or attending. May have had several incidents of physically abusive behavior directed at a person with possible legal charges.
Maximum	**6**	Requires constant supervision to monitor behavior.

Social Functioning
Communicate Effectively with Others*

Baseline	**0**	Determine the usual ability to get one's ideas across effectively to others.
Minimal	**1**	Complains that it is difficult to clearly and effectively communicate with others but still can.
Mild	**2**	Sometimes requires help from others to clearly and effectively communicate with them.
Moderate	**3**	Suffered a consequence for not effectively communicating with others. This individual requires the listener to actively interpret the intent of the communication.
Marked-Extreme	**4-5**	Experiences serious consequences due to inability to consistently communicate effectively with others. This individual is poorly understood despite active attempts to interpret the intent of the communication.
Maximum	**6**	Inability to communicate with others except regarding basic physical needs (i.e.autistic, catatonic)

*Many communication problems are secondary to CNS and/or ENT disorders and require evaluation using those specific guidelines instead. Examples of psychiatric disorders impairing clear and effective communications include symptoms of mood disorders (flight of ideas, loose associations, paucity of thought), symptoms of psychotic disorders (paranoia, delusions, hallucinations), substance abuse.

Social Functioning
Recreational Activities

Baseline	**0**	Determine the usual sedentary, active physical and spiritual activities they participated in before the injury, how frequently they initiated and participated in them and how pleasurable they were.
Minimal	**1**	Still participates in some (any) recreational activities but feels less comfortable. There is decreased frequency of initiation but they can still respond when others initiate and still derive pre-injury pleasure.
Mild	**2**	Only participates in response to others with some coaxing and cajoling. Rarely initiates recreational activity but responds when others initiate and can still derive some degree of pleasure.
Moderate	**3**	Only participates in a recreational activity under pressure and rarely enjoys it.
Marked-Extreme	**4-5**	Has no interest in participating in recreational activities, actively avoids it and experiences no pleasure from it.
Maximum	**6**	Participates in no recreational activities.

Social Functioning
Manage Conflicts with Others - Negotiate, Compromise

Baseline	**0**	Determine the individual's usual ability to resolve difficulties with others or reach consensus in a conflict before the accident. (The conflict is pathological.)
Minimal	**1**	Gets upset and has feelings of resentment which are not expressed. Regains composure by avoiding others and therefore prefers to work alone. Not overtly angry but internally troubled.
Mild	**2**	Sometimes gets upset and argumentative and expresses anger with the conflict eventually getting resolved. Can "go with the flow" but with some difficulty.
Moderate	**3**	Frequently argues with others when involved with or interacting with others. The conflict remains unresolved (rigid, sulks) until others intervene. The anger and conflict disrupts relationships on a team, in a family or friendship. They have suffered a consequence for inappropriate conflictual behavior.
Marked-Extreme	**4-5**	Frequently argues, unwilling to compromise. Gets upset and the anger and conflict are so disruptive that external control, limits, or measures are necessary. The conflict remains unresolved (rigid, sulks) and disrupts relationships. The conflict requires external help and is even then difficult to resolve. They have suffered a serious consequence for inappropriate conflictual behavior such as threatened job loss or other disciplinary action.
Maximum	**6**	Incarcerated, confined or hospitalized for aggressive behavior.

Adaptation to Stress
Set Realistic Short & Long Term Goals

Baseline	**0**	Determine the usual level of judgment used to set attainable goals. Does he/she usually underestimate, overestimate or achieve what he/she sets out to do? How much assistance is usually needed to set realistic achievable goals?
Minimal	**1**	Finds it difficult and/or stressful to determine what he/she can or cannot do but usually doesn't underestimate or overestimate or require assistance from others.
Mild	**2**	Requires and accepts some assistance from others to determine what he/she can or cannot do and occasionally underestimates or overestimates.
Moderate	**3**	Frequently underestimates or overestimates what he/she can do which causes mild consequences unless assistance is received from others. Requires some regular external structure but has difficulty accurately determining when assistance is necessary for himself/herself. (Results in increased symptoms, material damage.) When provided, assistance is accepted.
Marked-Extreme	**4-5**	Frequently underestimates or overestimates what he/she can do which causes serious consequences. Unaware of need for structure and assistance and either resists or has difficulty utilizing assistance from others. (Results in increased symptoms; potential or actual serious injury to self or others.)
Maximum	**6**	Unable to achieve any basic short or long-term goals.

Adaptation to Stress

Perform Activities (including work) on Schedule

Baseline	**0**	Determine the usual punctuality of the individual. How usual is it for them to be late for work or miss important functions?
Minimal	**1**	Finds it stressful to be on time and perform at an acceptable pace.
Mild	**2**	Requires some assistance from others to be on time and perform at an acceptable pace (reminders, phone calls, physical assistance).
Moderate	**3**	Suffered minor consequences for lateness and slow performance (reprimanded, upset others, confronted by others).
Marked-Extreme	**4-5**	Suffered serious consequences for lateness or slowness (threat of being fired, late for or missed very important appointment).
Maximum	**6**	Cannot be expected to complete a task. (No expected performance)

Adaptation to Stress
Adapt to Job Performance Requirements

Baseline	**0**	Determine the individual's ability to adapt (be flexible) to a non-negotiable change in rules or follow established procedures (new supervisor, change in shift, required meeting).
Minimal	**1**	Resistance, denial, negativity is felt but not overtly expressed.
Mild	**2**	Negative reaction to limits and rules is expressed, such as resistance, avoidance, making excuses, attempting to substitute another task for the required one.
Moderate	**3**	The behavior of the individual is called to his/her attention and they experienced mild external (corrective) consequences such as written reprimand. The individual demonstrates overt resistance to performing what is expected.
Marked-Extreme	**4-5**	They experienced serious disciplinary consequences such as suspension. Their behavior disrupts workplace relationships. The individual frequently does not perform required tasks.
Maximum	**6**	Due to inability to accept limits and/or follow rules, they experience dire consequences such as termination of employment, or incarceration.

Pitfalls

Pre-injury baseline: In order to determine impairment for each Areas of Function subcategory, the examiner must determine the worker's pre-injury baseline performance in that area. The baseline performance descriptions for each subcategory are based on a population "norm".
If the patient's pre-injury performance falls below the baseline or norm and into an impaired category, determine whether any additional impairment has occurred from this work-related condition. Subtract the patient's baseline number from the current number for the final rating. This is similar to normalization, it is not apportionment.

A patient with a pre-injury performance that varies from the population norm *may not* have a specific DSM diagnosis. The pre-injury performance level is a reflection of that patient's general level of function. Therefore, a lower than "normal" baseline

performance without a prior DSM diagnosis *is not* considered a condition that can be apportioned.

> *For example:* A person who functioned pre-injury without a significant other, who has no close friends, meaningful relationships or group affiliations, and has a low baseline in interpersonal relationships should not be rated as impaired if their level of function did not change after the injury.

"Double Dipping":

The thinking, concentration, and judgment section (III c) of the Mental Impairment Worksheet does not have a separate category in the Areas of Function because this area can be caused by brain pathology rather than psychiatric disorders. Evaluators must be careful not to "double dip" by rating the same symptoms in this category and the brain impairment table.

If the patient is impaired due to a brain injury, the cognitive impairment must be rated in the neurological section and not on the mental impairment worksheet. The other Areas of Function should be used to determine the total mental impairment, which is then **combined** with the brain impairment rating, if applicable. Occasionally this area can be rated if a patient takes a high dose of medication that affects their cognition due to psychological issues.

Areas of Function Case Example #1:

Ms. X. has been diagnosed with Generalized Anxiety Disorder related to her work-related injury. Prior to her work-related injury, she could usually balance the responsibilities of home and family. Recently she has had trouble dealing with her children when she comes home in the evening. She also avoids her usual weekend activities with friends unless her husband or others initiate them.

Although before the work-related injury she could generally meet her family's needs without conflict. Since her injury she doesn't assert herself and harbors a lot of resentment which builds up inside, resulting in her yelling at others. She had one episode of getting so frustrated that she cursed at her children who were making noise and she threw some dishes on the floor.

Which Areas of Function are evaluated from the case example?

Answer:
Social Functioning: Mild: Category 2, there are three possible areas under social functioning that could be rated in this example: manages conflicts with others, interpersonal relationships, and recreational activities.

- Managing Conflicts with Others: The patient fits into the mild, Category 2 impairment because "she harbors a lot of resentment which builds up inside, resulting in yelling at others."
- Interpersonal Relationships: She fits into the mild: Category 2 impairment because she needs coaxing of others to participate in social settings and may raise her voice or shout with interpersonal conflicts more frequently than usual.
- Recreational Activities: she also fits into the mild: Category 2 impairment due to avoiding her usual weekend activities with friends, and had a normal baseline prior to the injury.

The patient avoids interpersonal contact with others. Both interpersonal relationships and recreational activities categories could be used to rate this particular impairment. Therefore, to avoid overlap or "double dipping" in these two categories, *either* interpersonal relationships *or* recreational activities is chosen.

Areas of Function Case Example #2:

Ms. X. has difficulty sleeping due to her anxiety. She wakes up once or twice a night, however, on her current medication she can usually go back to sleep in an hour or so. Prior to the work-related injury, she woke up after one or two hours of sleep 2-3x/week. She would usually take a medication her physician prescribed to go back to sleep.

Which Areas of Function are evaluated from the case example?

Answer:

ADLs (sleep) This patient has an abnormal sleep pattern as her baseline prior to the work-related injury which is considered Minimal impairment: Category 1. The current injury has placed her a Mild impairment: Category 2. Overall, her grade of impairment would be 2-1=1 or Minimal Impairment.

Documentation in the Narrative Report

Documentation in the narrative report should include a discussion of the criteria used to establish each category ranking in the Areas of Function.

Work restrictions due to the psychiatric condition should be clearly stated including type and degree of stress, limitation of hours, etc

- For example: no graveyard or early morning shifts, limited interpersonal contact or other adjustments due to difficulty in close supervisory relationship, difficulty supervising others, difficulty concentrating on complex tasks, and difficulty with multitasking.

Maintenance care will depend on the need for medications, frequency of laboratory testing and exacerbating factors.

Pre-injury psychiatric diagnosis

If a psychiatric diagnosis existed at the time of the injury, medical records from hospitals, clinics, psychiatrists, and psychologists should be used to establish if there is a past psychiatric disorder. Non-medical records from family members and any other sources can be used to document ADLs, social functions, concentration and response to stress for determining a baseline of past psychiatric disorders.

Chronic Pain Rating

Rating for chronic pain is controlled by statute 8-42-101 (3.7), and can only be rated when there is a presence of an “anatomic or physiological correlation.” Anatomical correlation must be based on **objective** findings (a physiologic presence of pain). The *AMA Guides* recommends rating pain primarily under the physical impairment rating system. (Refer to the *AMA Guides*, p. 252, for the definition of chronic pain and impairment.)

Psychiatric impairment with consideration of a patient with chronic pain should be restricted to DSM or ICD diagnosis, generally under the following categories:

- Depression
- Adjustment or anxiety disorder
- Mood disorder
- Stressor disorders
- Other appropriate diagnosis

The clinician should avoid diagnostic classifications such as:

- Personality Changes or Unspecified Mental Disorder due to another medical condition
- Somatic with predominant pain
- Other specified or unspecified somatic disorders
- Psychological factors affecting other medical conditions

Example: A worker's ability to travel is impaired due to chronic back pain. This impairment is rated as part of the "anatomical or physiological" physical impairment.
Example: A worker is injured in a truck accident who now avoids driving on interstate freeways due to a phobia or post-traumatic stress disorder. This impairment is rated as a psychiatric travel impairment under ADLs.

Medications

A patient taking medication should be rated while using the medication. Patients refusing recommended medication or treatment are rated as they present without the medication or treatment.
Patients who are not compliant with their prescribed medication should be rated as they appear, but no additional points should be allowed for medication use.

Consider the use of Section IV of the mental impairment worksheet to deviate 0.5 from the final calculation if appropriate for non-compliance of medication. Justify your rationale on the worksheet.

A worker with **no** mental impairment rating per the mental impairment worksheet, but who must take new or additional medication due to the injury in order to function appropriately, may be assigned 1-3% impairment (Section V. of the mental impairment worksheet).

A worker experiencing side effects from maintenance medication can be rated under the psychiatric subcategories or physical impairment as appropriate.

Overlapping/Double Dipping

Some Areas of Function found on the psychiatric worksheet may overlap with other impairments due to physical function.

> *Example:* if a patient has chronic low back pain affecting sleep, the condition would be rated under the physical impairment and not the mental.

Only conditions caused by the DSM established diagnosis can be rated (i.e.: self-care and hygiene, travel, sexual function and sleep.)

Neurological function and other rating sections may overlap with behavioral function (See Brain Impairment, *AMA Guides* Table 1, p. 109). A patient cannot receive ratings for the same functional impairment from two sections of the *AMA Guides*.

> *Example:* A patient may not receive an impairment for loss of thinking, judgment, etc. under the neurological rating and psychiatric rating.

Scars or Disfigurement

A patient may qualify for an impairment rating if the scar or disfigurement causes a psychiatric disorder classified in the DSM. The rating can occur **only** if demonstrable changes in daily tasks or usual activities due to the psychological effect of the scar are present (not the physiological effects of the scar such as range of motion).

Activities of Daily Living (ADLs)

The majority of self-care and hygiene or travel problems are due to the physical diagnosis (physical ailments or pain) and are not ratable on the mental impairment worksheet. If ADL impairments are secondary to DSM diagnosis or psychological treatment, then a mental impairment rating can be given.

> *Example:* Many psychotropic medications cause sexual side effects, which require a psychiatric rating.

Apportionment

Refer to the Normalization and Apportionment chapter in the Level II Curriculum for apportionment determination.

Do not assume that a patient with a past history of a psychiatric disorder requiring hospitalization or treatment was impaired *at the time of the injury.* Many patients with past psychiatric disorders return to their normal or baseline functioning.

Workshop Case

History of Present Illness:

Mr. K is a 37-year-old supervisor employed by Tippy Trucks. He was involved in a serious vehicular accident on I-70 during a snowstorm. His truck jack-knifed and the cab crushed the guardrail. The driver of a small sports car was decapitated driving under the truck and two unrestrained children in another vehicle were thrown from the car and pronounced dead at the scene. Numerous other victims suffered injuries. Mr. K had no loss of consciousness or amnesia when first examined in the hospital emergency room. Mr. K suffered a C5 fracture and a dislocated fractured right hip. This required an immediate C5-C6 fusion and an eventual right hip joint replacement. After a lengthy course of rehabilitation, he was placed at MMI for his physical injuries with a 29% whole person impairment.

Mr. K was unable to return to employment as a driver because of his fear of driving a company vehicle. Initially, he avoided the scene of the accident and reported nightmares, flashbacks, intrusive thoughts, feelings of numbness and dissociation, as well as an exaggerated startle response. Because of his avoidance of driving, Mr. K was reassigned to clerical work which caused anxiety and lowered his self-esteem. He reported feelings of hopelessness and helplessness with suicidal ideation.

Mr. K was treated by a psychiatrist who diagnosed:

- Post-traumatic stress disorder, major depressive disorder without psychosis single episode moderate, chronic pain disorder, occupational problem, marital problem;
- Cervical fracture with fusion, right hip replacement;
- Severe financial stress, marital problems secondary to decreased function, chronic pain, inability to help elderly mother.

Mr. K reported that, before the workers' compensation injury, he and his wife were usually able to resolve their conflicts without outside help. Because of his irritability, depression, and inability to perform his usual chores, he and his wife are arguing more frequently. He became suicidal when his wife threatened to separate after he became physically abusive for the first time in their marriage.

Mr. K has been treated with Zoloft, 200 mg, Klonopin, 2 mg tid, Oxycontin 20 mg bid, Ambien 15 mg hs, and lithium 300 mg.

Background Information:

Mr. K was born and raised on a ranch in Wyoming. He is the youngest of three children. His brother who is 5 years older has remained on the ranch working full time since Mr. K's father died of a cardiac arrest approximately 5 years ago. Mr. K's sister who is three years older is a married elementary school teacher living in Boise, Idaho with her husband and three children.

Mr. K reported that his childhood was "normal" and his parents were married 37 years at the time of his father's death. His mother had moved to Denver to receive medical treatment and assistance from Mr. K and his family just prior to Mr. K's work injury.

Mr. K denied a history of emotional, physical or sexual abuse. He described himself as a B/C student throughout school. He reported having few friends after school due to the isolation of the ranch. Mr. K reported that at the annual fishing competition in his local high school he usually won the award for best fly fisherman of the year. When he was in high school, however, Mr. K participated in the 4-H club and had a steady girlfriend in his junior and senior years of high school. Mr. K reported that although his speech was usually terse he did not have difficulty communicating with others.

Mr. K graduated from North Laramie High School in 1977 and served in the Army for four years. He was honorably discharged as an E-4.

Mr. K reported that he did not have much experience with group activities or making new friends because of the type of environment he grew up in.

Mr. K returned to the Laramie area where he initially worked as a truck driver for Sears. He had difficulty getting along with two different shift supervisors and quit after 5 years. He then delivered newspapers for the local paper for the following three years while doing farm/ranch labor. During that time Mr. K met his wife who was a waitress in a local café near his parents' ranch. They got married when she became pregnant after dating for approximately one year.

Mr. K reported that he has usually been a fairly good judge of what he can do and cannot do. He denied having problems getting to work on time in the past. He admitted however that he has been told more than once by several supervisors that he had a negative attitude when asked to perform tasks or work assignments that he did not like.

Mr. K decided to move to Denver approximately 10 years ago because of his wife's asthma. She has been relatively well and is receiving treatment at National Jewish Hospital.

Mr. K had been employed by RTD as a bus driver for 5 years before going to work for Tippy Truck Company. He had difficulty getting along with his supervisors while at RTD which resulted in his frequently changing his routes in order to decrease his job stress.

Past Psychiatric History:
Mr. K reported that he was treated by a psychiatrist for a general anxiety disorder when he first moved to Denver. He recalled that the medication was probably valium and he denied having full blown panic attacks.

Substance Abuse History:
Mr. K indicated that he experimented with alcohol as a senior in high school. He denied having any DUI's, alcohol-related arrests or problems with drinking, and denied using any illicit drugs.

Medical History:
Mr. K denied having any previous workers' compensation claims. He was involved in a previous MVA when he hit a deer on a back road, totaling his vehicle. He denied sustaining any injuries from that accident.

Current Adjustment:
Mr. K lives in a three-bedroom 2-bath home in Arvada. His wife works part-time for an insurance company and his 9-year old daughter and 7-year old son attend Arvada Heights Elementary School.

On a typical day, Mr. K reports that he usually arises at 3 am and he then tosses and turns for an hour before getting back to sleep for an additional hour or two. He reported that his wife usually gets up at around 6 am with him and they drink a cup of coffee together before the children arise.

Mr. K reported that he then drives to work. He describes feeling bored and useless because of his inability to perform his full employment duties. He describes "being less of a man" since he is unable to drive his truck.

Mr. K usually eats lunch with a coworker. He returns home at about 5:30 pm. He finds himself exhausted. He describes feeling irritable and not wanting to assist the children

with homework. Mr. K reports that his medications caused some confusion, especially in the morning when he is tired. At home he requires his wife to set out his lunch, otherwise he would forget it. He reports feeling increased anxiety in the morning about getting to work on time since his supervisor has reprimanded him verbally on two occasions for tardiness. Mr. K described becoming irate at the supervisor for the admonition because he tries so hard to get to work on time. Mr. K reports that he is very angry with Tippy Trucks for trying to deny him treatment. As a result, he reports that he refuses to go out of his way to do anything other than what is expected from him. He is able to complete his required duties without difficulty, however, on one occasion, he refused to stay late to process a major order which resulted in the loss of some business to the company. When his supervisor found out about it, Mr. K received his first written warning at Tippy Trucks.

Mr. K's wife usually prepares dinner for the family. After dinner, he does not help with chores and usually watches TV for a few hours before going to bed. He describes having his life adversely affected by the pain because he can no longer work in his wood shop in the garage at home.

Mr. K reports that he has usually gone along with his wife to attend religious services on the weekend and did not mind her hosting a Tupperware party twice a year. Since the work injury, however, Mr. K states that he and his wife argue over his not attending the religious services and he took his medication early to go to bed when his wife recently had a Tupperware party to avoid seeing anybody.

Mr. K reports that he previously got along fairly well with his wife and children. However, since the injury, he has been irritable and depressed because of the pain.

Mr. K reports that he and his wife had satisfactory sexual relations approximately once per week before the injury. He reports that since the injury and use of pain medication he has no libido and agrees to have sex with his wife approximately every 2 ½ months upon her initiation. He has had some difficulty maintaining an erection since the injury and use of Zoloft. His erections have improved with Viagra, however, he still suffers from lack of sexual interest.

Mr. K reports that he speaks to his brother on the telephone about their mother approximately once per week. He reports that he visits his mother on weekends for a few hours and speaks to her once a week. He reports that occasionally he talks to her physician about her health status.

Mr. K states that his visits to his brother on the ranch have stopped completely because of his inability to drive on I-25. In addition, he feels useless with any type of physical ranch work, he reports that on one occasion he attempted to reach the ranch by back roads. However, the trip took 6 hours each way and was physically exhausting. He reports that he became so frustrated that he stopped at the side of the road to weep.

Mr. K admits that since the injury it has been very difficult for him to judge what he can and cannot do. For example, he injured himself while performing woodworking when he was taking Oxycontin. Another time he had to take a nap in the parking lot of Target one hour after taking his medication because he was too tired to go into the store. He was awakened by a police officer who assisted him home.

Mr. K used to be an avid fly fisherman and participated in local Wyoming rodeos. Because of his back pain, he no longer participates in any horseback riding or ranch activities. He has not gone fishing since the work injury. He used to enjoy working in his woodshop in the garage building western chairs and furniture. However, his pain causes him to become too easily distracted. When he takes his pain medication, however, he is afraid to operate his saws and finds that he hurts himself. Mr. K reports that he recently became interested in painting western scenery after watching a Pearl Ross Painting Seminar on television. He reports that he completed six oil paintings since starting 2 months ago and has sold three of them.

Mental Status Examination:
Mr. K is casually dressed and arrived 10 minutes late for his interview. His mood was slightly depressed and he requested to sit on a straight back check during the two-hour interview. Mr. K rose from the chair about every ½ hour and paced the room before sitting down.

Mr. K made good eye contact after we established some rapport.

His speech was logical and coherent. There were no loose associations or flights of ideas.

His mood was slightly depressed and he described irritability and anger when frustrated at home or at work.

Mr. K described having frequent nightmares about the truck accident with intrusive thoughts. He reported that he still cannot drive on the interstate and avoids driving the

company truck as well as his pickup truck. He reported an exaggerated startle response and feelings of dissociation and numbing.

Mr. K denied symptoms of general anxiety, panic or those that would be suggestive of OCD, obsessive compulsive disorder.

Mr. K described pain in his neck at all times, more severe with any awkward posture, such as leaning down to fill out reports at work. He also experiences pain in his hip when sitting for more than 30 minutes or walking on uneven surfaces.

Mr. K was oriented to time, place and person. His insight and judgment were slightly impaired.

Mr. K had difficulty subtracting by sevens from 100. He made three errors and subtracted slowly. He had difficulty calculating the following problem: If a donut is 26 cents how much change should he receive after buying three donuts with $1.00, excluding taxes.

He denied auditory, visual or tactile hallucinations. Occasionally he reported seeing things peripherally that he cannot make out distinctly.

Conclusions:
Mr. K is suffering from

- Chronic PTSD, Major Depressive Disorder without psychosis in partial remission; occupational problem; marital problem resolving; chronic pain disorder
- Cervical fracture with fusion, right hip replacement
- Severe financial stress, marital problems secondary to decreased function, chronic pain, inability to help elderly mother.
- World Health Organization Disability Assessment Schedule (WHODAS) 2.0: 3 / Moderate in most categories

Assuming that Mr. K has reached psychiatric MMI, and after evaluating Mr. K's baseline and pre-existing psychiatric status, use the Guidelines for Assessing and Rating Areas of Function (found at the end of this chapter) and the mental impairment rating worksheet to render a psychiatric impairment rating.

Answer: Mental Impairment Worksheet

Section I - Diagnosis: Chronic PTSD, Major Depressive Disorder

Section III - Areas of Function (impairment values selected may vary per examiner, but should be generally within 1 point of the established values below) Using the Guidelines for Assessing and Rating Areas of Function with category explanations and averaging the two highest values of the four categories increases the interrater reliability of the overall rating.

ADLs

- Self-care and hygiene = 0
- Travel = 4: Marked impairment ("He reported that he still cannot drive on the interstate and avoids driving the company truck as well as his pickup truck. He reported an exaggerated startle response and feelings of dissociation and numbing.")
- Sexual function = 3: Moderate impairment ("He reports that since the injury and use of pain medication he has no libido and agrees to have sex with his wife approximately every 2 ½ months upon her initiation. He has had some difficulty maintaining an erection since the injury and use of Zoloft. His erections have improved with Viagra, however, he still suffers from lack of sexual interest.")
- Sleep = 3: Moderate impairment ("On a typical day, Mr. K reports that he usually arises at 3 am and he then tosses and turns for an hour before getting back to sleep for an additional hour or two.")

Overall Category Rating: (average of 2 highest) = **3.5**

Social Functioning - consider the patient's pre-injury behavior which was at least a "1" in most categories.

- Interpersonal relationships = 3: Moderate impairment ("Because of his irritability, depression, and inability to perform his usual chores, he and his wife are arguing more frequently.")
- Communicates effectively with others = 0: still communicating to get his points across
- Participation in recreational activities = 2: Mild impairment ("he can no longer work in his wood shop in the garage at home." " he no longer participates in any horseback riding or ranch activities."
- Manage conflicts with others-negotiate, compromise = 2: Mild impairment (feels irritable, argues with his wife)

Overall Category Rating: (average of 2 highest) = **2.5**

Thinking, Concentration, and Judgment

- Ability to perform complex or varied tasks = 3: Moderate impairment (requires wife to set out his lunch or he would forget it)
- Judgment = 3: Moderate impairment ("difficult for him to judge what he can and cannot do", insight and judgment slightly impaired)
- Problem Solving = 3: Moderate impairment (difficult for him to judge what he can and cannot do, solve math problem)
- Ability to abstract or understand concepts = 2: Mild impairment (judgment slightly impaired, inability to remember lunch, solve math problem)
- Memory, immediate and remote = 2: Mild impairment (inability to remember lunch)
- Maintain attention, concentration on a specific task = 2: Mild impairment (inability to calculate math problem, pain causes him to become easily distracted)
- Perform simple, routine, repetitive tasks = 1: Minimal impairment (remember to prepare and eat lunch)
- Comprehend/follow simple instructions = 1: Minimal impairment (remember to prepare and eat lunch, difficulty judging what he can and cannot do)

Overall Category Rating: (average of 2 highest) = **3**

Adaptation to Stress

- Set realistic short & long term goals = 3: Moderate impairment (thought he could drive to ranch 6 hours each way but was not able to due to pain, ended up frustrated)
- Perform activities (including work) on schedule = 3: Moderate impairment (reprimanded by supervisor for tardiness on two occasions)
- Adapt to job performance requirements = 3: Moderate impairment (became irate with supervisor after being tardy for work because he tries hard to get to work on time, refuses to go out of his way for employer)

Overall Category Rating: (average of 2 highest) = **3**

Section IV.- Final Calculations:
Average the 2 highest Area of Function ratings: 3+3.5 = 6.5 divided by 2 = **3.25**

No addition or subtraction of 0.5

Using the Category Conversion Table, the overall Psychiatric Permanent Impairment Rating = **19-21%**

Section V. - an impairment rating exists so an impairment for medication use cannot be added to the rating.

Section VI. - Total Impairment Rating
Total whole person physical impairment = **29%** (per history of present illness documentation for the cervical and right hip impairment)
Combine the physical impairment of 29% with the psychiatric impairment of 19-21% = **42-44%**

Areas of Function

1. Activities of Daily Living

Sexual Function: Scoring categories 5 and 6 are not available because the maximum impairment allowed per the AMA Guides for total loss of sexual function is 30% for a male less than 40 years of age; 20% for a male 40 or older.

Sleep: Scoring categories 5 and 6 are not available because the AMA Guides allow a maximum of 50% impairment for sleep or arousal disorders. To reach a 20% rating the activities of daily living must be affected to the extent that supervision is required in some areas. To reach a 50% rating, supervision by caretakers is required.

2. Social Functioning

Social functioning refers to an individual's capacity to interact appropriately and communicate effectively with other individuals. Social functioning includes the ability to get along with others, such as with family members, friends, neighbors, grocery clerks, landlords or bus drivers. Impaired social functioning may be demonstrated by a history of altercations, evictions, firings, fear of strangers, avoidance of interpersonal relationships, social isolation, etc. Strength in social functioning may be documented by an individual's ability to initiate social contacts with others, communicate clearly with others, interact and participate in group activities, etc. Cooperative behaviors, consideration for others, awareness of others' feelings, and social maturity also need to be considered. Social functioning in work situations may involve interactions with the public, responding appropriately to persons in authority, such as supervisors, or cooperative behaviors involving co-workers.

Again, it is not the number of areas in which social functioning is impaired, but the overall degree of interference with a particular functional area or combination of such areas of functioning. For example, a person who is highly antagonistic, uncooperative, or hostile, but is tolerated by local storekeepers may nevertheless have marked restrictions in social functioning because that behavior is not acceptable in other social contexts, such as work. (AMA Guides, 3rd Edition (revised), p. 237)

3. Thinking, Concentration and Judgment

Thinking, concentration, and judgment refer to the ability to sustain focused attention sufficiently long to permit the timely completion of tasks and to make reasoned or logical decisions as to alternative courses of action. Deficiencies in concentration and judgment are best observed in work and work-like settings. Major impairment in this area can often be assessed through direct psychiatric examination and/or psychological testing, although mental status examination or psychological test data alone should not be used to accurately describe concentration and sustained ability to perform work-like tasks. On mental status examinations, concentration is assessed by tasks requiring shortterm memory or through tasks such as having the individual subtract serial sevens from 100. In psychological tests of intelligence or memory, concentration can be assessed through tasks requiring short-term memory or through tasks that must be completed within established time limits. Strengths and weaknesses in areas of concentration can be discussed in terms of frequency of errors, time it takes to complete the task, and extent to which assistance is required to complete the task. (Disability Evaluation Under Social Security, p.88, Social Security Administration Pub. No. 64-039)

4. Adaptation to Stress

The individual should be able to set realistic and appropriate goals. Given that the work-related injury may have induced various limitations, the individual should demonstrate realistic adaptations to the medical/physical situation. He/she should be able to accommodate changes from pre-injury status to the current status. Adapting to performance standards requires that the individual can adequately cope with job performance and time expectations. Further, the individual should demonstrate the capacity to follow rules and policies, respond appropriately to changes in the work setting, and utilize resources available within the community, medical and family areas.

Permanent Work-Related Mental Impairment Rating Report Worksheet
Category Definition Guidelines

Category 0: **No Permanent Impairment.**

Mental symptoms arising from the work-related psychiatric diagnosis have been absent for the past month. ADLs are not affected. Functioning is at pre-injury baseline in social and work activities in all areas; no more than everyday problems.

Category 1: **Minimal Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, minimally impair functioning.

Category 2: **Mild Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis are not likely to remit despite medical treatment, and are mildly impairing. ADLs are mildly disrupted. Functioning shows mild permanent impairment in social or work activities.

Category 3: **Moderate Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are moderately impairing. ADLs are moderately disrupted. Functioning shows moderate permanent impairment. Activities sometimes need direction or supervision.

Category 4: **Marked Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are seriously impairing. ADLs are seriously disrupted. Functioning shows serious difficulties in social or work activities.

Category 5: **Extreme Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are incapacitating. At times, ADLs require structuring. Functioning is quite poor, unsafe in work settings, at times requires hospitalization or full-time supervision. Most activities require directed care.

Category 6: **Maximum Category of Permanent Impairment.**

This impairment level precludes useful functioning in all areas. These individuals are generally appropriate for institutionalized settings, if available. All activities require directed care.

Colorado Department of Labor and Employment: Division of Workers' Compensation

Permanent Work-Related Mental Impairment Rating Report Worksheet

Since the AMA Guides to the Evaluation of Permanent Impairment, 3rd Edition (Revised) does not provide a quantified method for assigning permanent impairment percentages under Chapter 14, "Mental and Behavioral Disorders," the provider shall utilize this form.

Scoring Instructions:

1. This form should only be used to determine an impairment after the case has been found to meet all of the specific criteria for a Diagnostic and Statistical Manual (DSM) diagnosis.
2. The AMA Guides to Permanent Impairment, 3rd Edition (Revised), page 235, should be consulted for guidance in determining these ratings.
3. Determination of a rating of permanent mental or behavioral impairment shall be limited to mental or behavioral disorder impairments not likely to remit with further mental health treatment.
4. Impairment ratings based on chronic pain are not applicable within the mental/behavioral domain, but are restricted to physical examination with evidence of anatomic or physiologic correlation and included within a physical impairment rating.
5. To obtain the final overall impairment rating:
    a. The elements to be rated are divided into four Areas of Function: Activities of Daily Living; Social Functioning; Thinking, Concentration and Judgment; and Adaptation to Stress.
    b. Assign a rating (0-6) to each subcategory of the areas of function based on patient self-report, other sources of information, and the physician's clinical assessment. (See Category Definitions on Page 2 of this form.) Given the heavy reliance on the patient's subjective report for information in some of the ratings, the physician should give careful consideration to any corroborating evidence that might be available.
    c. Average the two highest subcategory ratings within each Areas of Function to obtain the overall category rating. For example, if the two highest scores are 2 and 5, the category score is 3.5.
    d. To calculate the overall impairment rating, average the two highest category ratings and then, if appropriate in the case, use clinical judgment to add or subtract up to 0.5 point from the result. If the score is modified in this fashion due to clinical judgment, justification for doing so must be documented. Factors influencing the physician's discretion may include the following:
        i. Factors influencing the patient's believability, such as the presence of symptom magnification, or the presence or absence of corroborating information from psychological or neuropsychological testing;
        ii. The extent to which medication ameliorates the effects of the condition;
    e. Use the Category Conversion Table on page 6 to convert the final number to a percentage.
6. Include the DSM diagnosis at the top of the worksheet.
7. If apportionment is applicable, complete the Apportionment Calculation Worksheet (Desk Aid #14), calculating the pre-injury rating to be subtracted from the total current rating.
8. If there is a finding of no impairment, refer to Part V on the worksheet, if appropriate.

Worksheet

Patient Name Mr. K Date of Service _____

WC # _____ Carrier # _____

Note: Determination of a rating of permanent mental or behavioral impairment shall be limited to mental or behavioral disorder impairments not likely to remit with further mental health treatment. Further, impairment ratings based on chronic pain are not applicable within the mental/behavioral domain, but are restricted to physical examination with evidence of anatomic or physiologic correlation and included within a physical impairment rating.

I. DSM Diagnosis: Chronic PTSD, Major Depressive Disorder

II. Levels of Permanent Mental Impairment

Category

0. No permanent impairment
1. Minimal Category of Permanent Impairment
2. Mild Category of Permanent Impairment
3. Moderate Category of Permanent Impairment
4. Marked Category of Permanent Impairment
5. Extreme Category of Permanent Impairment
6. Maximum Category of Permanent Impairment

III. Areas of Function

a. Activities of Daily Living. ***Rate only impairments due strictly to the psychiatric condition.***

(Rate 0-6) 0 Self care and hygiene (dressing, bathing, eating, cooking)

(Rate 0-6) 4 Travel (driving, riding, flying) i.e. impairments in driving, riding, flying which are generally a result of symptoms of affective or anxiety disorders

(Rate 0-4) 3 Sexual function (participating in usual sexual activities)

(Rate 0-4) 3 Sleep (restful sleep pattern)

Overall Category Rating:
(average of 2 highest)

3.5

b. Social Functioning

(Rate 0-6) 3 Interpersonal relationships

(Rate 0-6) 0 Communicates effectively with others

(Rate 0-6) 2 Participation in recreational activities (consider pre-injury activities of the patient)

(Rate 0-6) 2 Manage conflicts with others--negotiate, compromise

Overall Category Rating:
(average of 2 highest)

2.5

[1] See attached Appendix for further description of all or part of the listed areas of function.

c. Thinking, Concentration & Judgment

(Rate 0-6) 3 Ability to perform complex or varied tasks

(Rate 0-6) 3 Judgment

(Rate 0-6) 3 Problem solving

(Rate 0-6) 2 Ability to abstract or understand concepts

(Rate 0-6) 2 Memory, immediate and remote

(Rate 0-6) 2 Maintain attention, concentration on a specific task

(Rate 0-6) 1 Perform simple, routine, repetitive tasks

(Rate 0-6) 1 Comprehend/follow simple instructions

Overall Category Rating:
(average of 2 highest)

3

d. Adaptation to Stress

(Rate 0-6) 3 Set realistic short & long term goals

(Rate 0-6) 3 Perform activities (including work) on schedule

(Rate 0-6) 3 Adapt to job performance requirements

Overall Category Rating:
(average of 2 highest)

3

IV. Final Calculations:

Average the two highest Areas of Function ratings: 3 + 3.5 **divided by 2 =** 3.25

Add or subtract up to 0.5 from the completed calculation above, if appropriate, based on clinical judgment. Justify this deviation below or attach a separate sheet:

Using the Category Conversion Table on page 6 of this form, convert the final number to a percentage for the overall permanent impairment rating:

Overall Category Rating: Permanent Impairment

Rating 20 %

OR

V. If this patient has ZERO impairment according to the above criteria and requires continuing medication for their DSM diagnosis, an impairment of 1-3% may be assigned _____%

If Zero % Psychiatric Rating

Rating _____%

VI. Total Impairment Rating (if applicable)

Total Whole Person Physical Impairment = 29 %

Combined with psychiatric permanent impairment equals:

Total Whole Person Impairment (including psychiatric impairment)

Rating 43 %

Physician: _____ Date: _____
Signature

Category Conversion Table

Category Conversion Table	
Final Score	Percentage
0	0
0.25	0
0.5	1
0.75	1
1	1
1.25	2
1.5	3 to 4
1.75	5
2	6 to 7
2.25	8 to 9
2.5	10 to 12
2.75	13 to 15
3	16 to 18
3.25	19 to 21
3.5	22 to 23
3.75	24 to 25
4	26 to 32
4.25	33 to 38
4.5	39 to 44
4.75	45 to 50
5	51 to 56
5.25	57 to 62
5.5	63 to 68
5.75	69 to 75
6	76 to 83
6.25	84 to 91
6.5	92 to 100

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Areas of Function

1. Activities of Daily Living

Sexual Function: Scoring categories 5 and 6 are not available because the maximum impairment allowed per the AMA Guides for total loss of sexual function is 30% for a male less than 40 years of age; 20% for a male 40 or older.

Sleep: Scoring categories 5 and 6 are not available because the AMA Guides allow a maximum of 50% impairment for sleep or arousal disorders. To reach a 20% rating the activities of daily living must be affected to the extent that supervision is required in some areas. To reach a 50% rating, supervision by caretakers is required.

2. Social Functioning

Social functioning refers to an individual's capacity to interact appropriately and communicate effectively with other individuals. Social functioning includes the ability to get along with others, such as with family members, friends, neighbors, grocery clerks, landlords or bus drivers. Impaired social functioning may be demonstrated by a history of altercations, evictions, firings, fear of strangers, avoidance of interpersonal relationships, social isolation, etc. Strength in social functioning may be documented by an individual's ability to initiate social contacts with others, communicate clearly with others, interact and participate in group activities, etc. Cooperative behaviors, consideration for others, awareness of others' feelings, and social maturity also need to be considered. Social functioning in work situations may involve interactions with the public, responding appropriately to persons in authority, such as supervisors, or cooperative behaviors involving co-workers.

Again, it is not the number of areas in which social functioning is impaired, but the overall degree of interference with a particular functional area or combination of such areas of functioning. For example, a person who is highly antagonistic, uncooperative, or hostile, but is tolerated by local storekeepers may nevertheless have marked restrictions in social functioning because that behavior is not acceptable in other social contexts, such as work. (AMA Guides, 3rd Edition (revised), p. 237)

3. Thinking, Concentration and Judgment

Thinking, concentration, and judgment refer to the ability to sustain focused attention sufficiently long to permit the timely completion of tasks and to make reasoned or logical decisions as to alternative courses of action. Deficiencies in concentration and judgment are best observed in work and work-like settings. Major impairment in this area can often be assessed through direct psychiatric examination and/or psychological testing, although mental status examination or psychological test data alone should not be used to accurately describe concentration and sustained ability to perform work-like tasks. On mental status examinations, concentration is assessed by tasks requiring shortterm memory or through tasks such as having the individual subtract serial sevens from 100. In psychological tests of intelligence or memory, concentration can be assessed through tasks requiring short-term memory or through tasks that must be completed within established time limits. Strengths and weaknesses in areas of concentration can be discussed in terms of frequency of errors, time it takes to complete the task, and extent to which assistance is required to complete the task. (Disability Evaluation Under Social Security, p.88, Social Security Administration Pub. No. 64-039)

4. Adaptation to Stress

The individual should be able to set realistic and appropriate goals. Given that the work-related injury may have induced various limitations, the individual should demonstrate realistic adaptations to the medical/physical situation. He/she should be able to accommodate changes from pre-injury status to the current status. Adapting to performance standards requires that the individual can adequately cope with job performance and time expectations. Further, the individual should demonstrate the capacity to follow rules and policies, respond appropriately to changes in the work setting, and utilize resources available within the community, medical and family areas.

Permanent Work-Related Mental Impairment Rating Report Worksheet
Category Definition Guidelines

Category 0: **No Permanent Impairment.**

Mental symptoms arising from the work-related psychiatric diagnosis have been absent for the past month. ADLs are not affected. Functioning is at pre-injury baseline in social and work activities in all areas; no more than everyday problems.

Category 1: **Minimal Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, minimally impair functioning.

Category 2: **Mild Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis are not likely to remit despite medical treatment, and are mildly impairing. ADLs are mildly disrupted. Functioning shows mild permanent impairment in social or work activities.

Category 3: **Moderate Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are moderately impairing. ADLs are moderately disrupted. Functioning shows moderate permanent impairment. Activities sometimes need direction or supervision.

Category 4: **Marked Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are seriously impairing. ADLs are seriously disrupted. Functioning shows serious difficulties in social or work activities.

Category 5: **Extreme Category of Permanent Impairment.**

Mental symptoms, arising from the work-related psychiatric diagnosis and not likely to remit despite medical treatment, are incapacitating. At times, ADLs require structuring. Functioning is quite poor, unsafe in work settings, at times requires hospitalization or full-time supervision. Most activities require directed care.

Category 6: **Maximum Category of Permanent Impairment.**

This impairment level precludes useful functioning in all areas. These individuals are generally appropriate for institutionalized settings, if available. All activities require directed care.

Colorado Department of Labor and Employment: Division of Workers' Compensation

Permanent Work-Related Mental Impairment Rating Report Worksheet

Since the AMA Guides to the Evaluation of Permanent Impairment, 3rd Edition (Revised) does not provide a quantified method for assigning permanent impairment percentages under Chapter 14, "Mental and Behavioral Disorders," the provider shall utilize this form.

Scoring Instructions:

1. This form should only be used to determine an impairment after the case has been found to meet all of the specific criteria for a Diagnostic and Statistical Manual (DSM) diagnosis.
2. The AMA Guides to Permanent Impairment, 3rd Edition (Revised), page 235, should be consulted for guidance in determining these ratings.
3. Determination of a rating of permanent mental or behavioral impairment shall be limited to mental or behavioral disorder impairments not likely to remit with further mental health treatment.
4. Impairment ratings based on chronic pain are not applicable within the mental/behavioral domain, but are restricted to physical examination with evidence of anatomic or physiologic correlation and included within a physical impairment rating.
5. To obtain the final overall impairment rating:
    a. The elements to be rated are divided into four Areas of Function: Activities of Daily Living; Social Functioning; Thinking, Concentration and Judgment; and Adaptation to Stress.
    b. Assign a rating (0-6) to each subcategory of the areas of function based on patient self-report, other sources of information, and the physician's clinical assessment. (See Category Definitions on Page 2 of this form.) Given the heavy reliance on the patient's subjective report for information in some of the ratings, the physician should give careful consideration to any corroborating evidence that might be available.
    c. Average the two highest subcategory ratings within each Areas of Function to obtain the overall category rating. For example, if the two highest scores are 2 and 5, the category score is 3.5.
    d. To calculate the overall impairment rating, average the two highest category ratings and then, if appropriate in the case, use clinical judgment to add or subtract up to 0.5 point from the result. If the score is modified in this fashion due to clinical judgment, justification for doing so must be documented. Factors influencing the physician's discretion may include the following:
        i. Factors influencing the patient's believability, such as the presence of symptom magnification, or the presence or absence of corroborating information from psychological or neuropsychological testing;
        ii. The extent to which medication ameliorates the effects of the condition;
    e. Use the Category Conversion Table on page 6 to convert the final number to a percentage.
6. Include the DSM diagnosis at the top of the worksheet.
7. If apportionment is applicable, complete the Apportionment Calculation Worksheet (Desk Aid #14), calculating the pre-injury rating to be subtracted from the total current rating.
8. If there is a finding of no impairment, refer to Part V on the worksheet, if appropriate.

Worksheet

Patient Name _____ Date of Service _____

WC # _____ Carrier # _____

Note: Determination of a rating of permanent mental or behavioral impairment shall be limited to mental or behavioral disorder impairments not likely to remit with further mental health treatment. Further, impairment ratings based on chronic pain are not applicable within the mental/behavioral domain, but are restricted to physical examination with evidence of anatomic or physiologic correlation and included within a physical impairment rating.

I. DSM Diagnosis: _____

II. Levels of Permanent Mental Impairment

Category

0. No permanent impairment
1. Minimal Category of Permanent Impairment
2. Mild Category of Permanent Impairment
3. Moderate Category of Permanent Impairment
4. Marked Category of Permanent Impairment
5. Extreme Category of Permanent Impairment
6. Maximum Category of Permanent Impairment

III. Areas of Function

a. Activities of Daily Living. ***Rate only impairments due strictly to the psychiatric condition.***

(Rate 0-6) ___ Self care and hygiene (dressing, bathing, eating, cooking)

(Rate 0-6) ___ Travel (driving, riding, flying) i.e. impairments in driving, riding, flying which are generally a result of symptoms of affective or anxiety disorders

(Rate 0-4) ___ Sexual function (participating in usual sexual activities)

(Rate 0-4) ___ Sleep (restful sleep pattern)

Overall Category Rating:
(average of 2 highest)

_____

b. Social Functioning

(Rate 0-6) ___ Interpersonal relationships

(Rate 0-6) ___ Communicates effectively with others

(Rate 0-6) ___ Participation in recreational activities (consider pre-injury activities of the patient)

(Rate 0-6) ___ Manage conflicts with others--negotiate, compromise

Overall Category Rating:
(average of 2 highest)

_____

[1] See attached Appendix for further description of all or part of the listed areas of function.

c. Thinking, Concentration & Judgment

(Rate 0-6) ___ Ability to perform complex or varied tasks

(Rate 0-6) ___ Judgment

(Rate 0-6) ___ Problem solving

(Rate 0-6) ___ Ability to abstract or understand concepts

(Rate 0-6) ___ Memory, immediate and remote

(Rate 0-6) ___ Maintain attention, concentration on a specific task

(Rate 0-6) ___ Perform simple, routine, repetitive tasks

(Rate 0-6) ___ Comprehend/follow simple instructions

Overall Category Rating:
(average of 2 highest)

_____

d. Adaptation to Stress

(Rate 0-6) ___ Set realistic short & long term goals

(Rate 0-6) ___ Perform activities (including work) on schedule

(Rate 0-6) ___ Adapt to job performance requirements

Overall Category Rating:
(average of 2 highest)

_____

IV. Final Calculations:

Average the two highest Areas of Function ratings: _____ + _____ divided by 2 = _____

Add or subtract up to 0.5 from the completed calculation above, if appropriate, based on clinical judgment. Justify this deviation below or attach a separate sheet:

Using the Category Conversion Table on page 6 of this form, convert the final number to a percentage for the overall permanent impairment rating:

Overall Category Rating: Permanent Impairment

Rating _____%

OR

If Zero % Psychiatric Rating

***Rating* _____%**

V. If this patient has ZERO impairment according to the above criteria and requires continuing medication for their DSM diagnosis, an impairment of 1-3% may be assigned _____%

VI. Total Impairment Rating (if applicable)

Total Whole Person Physical Impairment = _____%

Combined with psychiatric permanent impairment equals:

Total Whole Person Impairment (including psychiatric impairment)

Rating _____%

Physician: _____ Date: _____
Signature

Category Conversion Table

Category Conversion Table	
Final Score	Percentage
0	0
0.25	0
0.5	1
0.75	1
1	1
1.25	2
1.5	3 to 4
1.75	5
2	6 to 7
2.25	8 to 9
2.5	10 to 12
2.75	13 to 15
3	16 to 18
3.25	19 to 21
3.5	22 to 23
3.75	24 to 25
4	26 to 32
4.25	33 to 38
4.5	39 to 44
4.75	45 to 50
5	51 to 56
5.25	57 to 62
5.5	63 to 68
5.75	69 to 75
6	76 to 83
6.25	84 to 91
6.5	92 to 100

Guidelines for Assessing and Rating Areas of Function on the Mental Impairment Rating Worksheet

Activities of Daily Living
Sexual Impairments*

Baseline	**0**	First, determine the usual frequency, responsiveness (orgasms, erections, ejaculations) and degree of enjoyment of sex before the injury.
Minimal	**1**	Rarely initiates but can usually climax (female)/erection (male). Frequency is equal to slightly less than baseline frequency.
Mild	**2**	Has sex once per month (baseline is once per week) in response to partner and can occasionally reach orgasm (female)/usually ejaculate (male). Still derives pleasure/enjoyment from sexual activity.
Moderate	**3**	Has sex once every two months or longer (baseline once per week) in response to partner and rarely reaches orgasm (female)/has occasional erectile dysfunction (male). Rarely experiences pleasure/enjoyment.
Marked	**4**	Has no interest in sex and is without orgasms (female)/always has difficulty with erections (male) and avoids sex.

*Alterations in the sexual function due to pain is included in the physical impairment rating, and not rated under psychiatric impairment.

Activities of Daily Living
Sleep*

Baseline	**0**	First, demonstrate the usual sleep pattern and whether they used medications before the injury.
Minimal	**1**	Has trouble falling asleep most nights but can sleep through the night. If now on medication and not before the injury, the individual is at least minimally impaired.
Mild	**2**	Awakens twice during the night but can usually fall back to sleep in less than one hour.
Moderate	**3**	Has difficulty falling asleep and wakes up one to two times per night but is usually unable to fall back to sleep for several hours.
Marked	**4**	Can't get to sleep for more than two hours at a time and regularly naps during the daytime (disturbed diurnal pattern).

*****Alterations in sleep patterns due to pain is included in the physical impairment rating, and not rated under psychiatric impairment.

Social Functioning
Interpersonal Relationships

Baseline	**0**	First determine the individual's usual openness to others and how often they greeted others, made new friends, and tolerated disagreements with others without behavioral extremes or adapted to get along with others.
Minimal	**1**	Can still initiate and meet new people and behave appropriately but feels uncomfortable and would prefer to be alone. There are less frequent social contacts but they still respond when others initiate or negotiate. Can still adapt to others when they have to. May raise voice or shout in response to interpersonal conflicts more frequently than usual.
Mild	**2**	The only social contacts are initiated by others and with some coaxing; rarely initiates social contacts and resents negotiating and compromising but still can adapt; can still enjoy some social experiences but not frequently. Can be verbally abusive when faced with interpersonal conflict.
Moderate	**3**	Requires pressure or necessity to have social contacts and rarely enjoys it, difficulty compromising, negotiating, and adapting but still can for very important purposes. Or at least one episode of physically threatening or abusive behavior directed at a person.
Marked-Extreme	**4-5**	Has no interest in others and actively avoids interactions. Derives no social pleasure and finds it difficult to adapt to others even when there are dire consequences for not compromising or attending. May have had several incidents of physically abusive behavior directed at a person with possible legal charges.
Maximum	**6**	Requires constant supervision to monitor behavior.

Social Functioning
Communicate Effectively with Others

Baseline	**0**	Determine the usual ability to get one's ideas across effectively to others.
Minimal	**1**	Complains that it is difficult to clearly and effectively communicate with others but still can.
Mild	**2**	Sometimes requires help from others to clearly and effectively communicate with them.
Moderate	**3**	Suffered a consequence for not effectively communicating with others. This individual requires the listener to actively interpret the intent of the communication.
Marked-Extreme	**4-5**	Experiences serious consequences due to inability to consistently communicate effectively with others. This individual is poorly understood despite active attempts to interpret the intent of the communication.
Maximum	**6**	Inability to communicate with others except regarding basic physical needs (i.e.autistic, catatonic)

*Many communication problems are secondary to CNS and/or ENT disorders and require evaluation using those specific guidelines instead. Examples of psychiatric disorders impairing clear and effective communications include symptoms of mood disorders (flight of ideas, loose associations, paucity of thought), symptoms of psychotic disorders (paranoia, delusions, hallucinations), substance abuse.

Social Functioning
Recreational Activities

Baseline	**0**	Determine the usual sedentary, active physical and spiritual activities they participated in before the injury, how frequently they initiated and participated in them and how pleasurable they were.
Minimal	**1**	Still participates in some (any) recreational activities but feels less comfortable. There is decreased frequency of initiation but they can still respond when others initiate and still derive pre-injury pleasure.
Mild	**2**	Only participates in response to others with some coaxing and cajoling. Rarely initiates recreational activity but responds when others initiate and can still derive some degree of pleasure.
Moderate	**3**	Only participates in a recreational activity under pressure and rarely enjoys it.
Marked-Extreme	**4-5**	Has no interest in participating in recreational activities, actively avoids it and experiences no pleasure from it.
Maximum	**6**	Participates in no recreational activities.

Social Functioning

Manage Conflicts with Others - Negotiate, Compromise

Baseline	**0**	Determine the individual's usual ability to resolve difficulties with others or reach consensus in a conflict before the accident. (The conflict is pathological.)
Minimal	**1**	Gets upset and has feelings of resentment which are not expressed. Regains composure by avoiding others and therefore prefers to work alone. Not overtly angry but internally troubled.
Mild	**2**	Sometimes gets upset and argumentative and expresses anger with the conflict eventually getting resolved. Can "go with the flow" but with some difficulty.
Moderate	**3**	Frequently argues with others when involved with or interacting with others. The conflict remains unresolved (rigid, sulks) until others intervene. The anger and conflict disrupts relationships on a team, in a family or friendship. They have suffered a consequence for inappropriate conflictual behavior.
Marked-Extreme	**4-5**	Frequently argues, unwilling to compromise. Gets upset and the anger and conflict are so disruptive that external control, limits, or measures are necessary. The conflict remains unresolved (rigid, sulks) and disrupts relationships. The conflict requires external help and is even then difficult to resolve. They have suffered a serious consequence for inappropriate conflictual behavior such as threatened job loss or other disciplinary action.
Maximum	**6**	Incarcerated, confined or hospitalized for aggressive behavior.

Adaptation to Stress
Set Realistic Short & Long Term Goals

Baseline	**0**	Determine the usual level of judgment used to set attainable goals. Does he/she usually underestimate, overestimate or achieve what he/she sets out to do? How much assistance is usually needed to set realistic achievable goals?
Minimal	**1**	Finds it difficult and/or stressful to determine what he/she can or cannot do but usually doesn't underestimate or overestimate or require assistance from others.
Mild	**2**	Requires and accepts some assistance from others to determine what he/she can or cannot do and occasionally underestimates or overestimates.
Moderate	**3**	Frequently underestimates or overestimates what he/she can do which causes mild consequences unless assistance is received from others. Requires some regular external structure but has difficulty accurately determining when assistance is necessary for himself/herself. (Results in increased symptoms, material damage.) When provided, assistance is accepted.
Marked-Extreme	**4-5**	Frequently underestimates or overestimates what he/she can do which causes serious consequences. Unaware of need for structure and assistance and either resists or has difficulty utilizing assistance from others. (Results in increased symptoms; potential or actual serious injury to self or others.)
Maximum	**6**	Unable to achieve any basic short or long-term goals.

Adaptation to Stress

Perform Activities (including work) on Schedule

Baseline	**0**	Determine the usual punctuality of the individual. How usual is it for them to be late for work or miss important functions?
Minimal	**1**	Finds it stressful to be on time and perform at an acceptable pace.
Mild	**2**	Requires some assistance from others to be on time and perform at an acceptable pace (reminders, phone calls, physical assistance).
Moderate	**3**	Suffered minor consequences for lateness and slow performance (reprimanded, upset others, confronted by others).
Marked-Extreme	**4-5**	Suffered serious consequences for lateness or slowness (threat of being fired, late for or missed very important appointment).
Maximum	**6**	Cannot be expected to complete a task. (No expected performance)

Adaptation to Stress
Adapt to Job Performance Requirements

Baseline	**0**	Determine the individual's ability to adapt (be flexible) to a non-negotiable change in rules or follow established procedures (new supervisor, change in shift, required meeting).
Minimal	**1**	Resistance, denial, negativity is felt but not overtly expressed.
Mild	**2**	Negative reaction to limits and rules is expressed, such as resistance, avoidance, making excuses, attempting to substitute another task for the required one.
Moderate	**3**	The behavior of the individual is called to his/her attention and they experienced mild external (corrective) consequences such as written reprimand. The individual demonstrates overt resistance to performing what is expected.
Marked-Extreme	**4-5**	They experienced serious disciplinary consequences such as suspension. Their behavior disrupts workplace relationships. The individual frequently does not perform required tasks.
Maximum	**6**	Due to inability to accept limits and/or follow rules, they experience dire consequences such as termination from employment, or incarceration.

Vision Impairment Ratings

AMA Guides, 3rd Edition, revised - Chapter 8 (p. 161)

Objectives:

1) Determine the assessment standards for evaluating a patient with a vision impairment.
2) Calculate a vision impairment rating using a case example.

*Vision impairment is usually performed by rating both right and left visual fields, while binocular visual field impairment is uncommonly performed.

Summary/Steps for Determining Vision Impairment Ratings

Monocular Visual Impairment Using Monocular Visual Fields

1) Determine **corrected** near and far *central visual acuity* in each eye.
    - The total impairment for corrected acuity for each eye is determined by using *AMA Guides* Table 2 on p. 163 (use upper value). Enter the values on the Monocular Visual Fields Worksheet under the "Central Acuity" section.
    - The lower figure on the chart should be taken if monocular aphakia or monocular pseudophakia are present.

2) Determine the loss of visual fields for each eye. If using binocular visual field measurements, a separate system is used, as described in the Summary/Steps for Binocular Visual Impairment (page 2 of this chapter).
    - Measure the total degrees of visual field retained.
    - Refer to Table 4 (p. 167) for the percent loss of monocular visual fields and document the value on the Monocular Visual Fields Worksheet under the "Visual Fields" section.

3) If diplopia is present due to an ocular motility dysfunction, the loss of ocular motility is assigned to the eye with worse vision.
    - Determine the percentage/loss of *ocular motility* assigned to the worse eye in diplopia fields by using *AMA Guides* Figure 3 (p. 168). Enter the value on the Monocular Visual Fields Worksheet under the "Motility" section.

4) An additional 5-10% for "other ocular impairments" of the involved eye can be combined if it affects overall vision. If applicable, document the value on the Monocular Visual Fields Worksheet for the affected eye. Ocular impairments include:
    - Vitreous opacities,
    - non-reactive pupil, and
    - light scattering disturbances.

5) Calculate total eye loss for each eye separately by using the Combined Values Chart (*AMA Guides* p. 254) by combining:
    - total impairment for corrected acuity,
    - total impairment for visual fields,

- percentage/loss of ocular motility to worse eye, and
- additional impairment for ocular impairments if applicable.

6) Calculate total visual system impairment by using *AMA Guides* Table 5 (pp. 169-171).

- Read impairment of worse eye on the vertical axis of the chart and better eye on the horizontal axis.
- If bilateral aphakia is present and corrected central visual acuity is used in the calculations, an additional 25% is added to the remaining impairment.
- Document the value on the Monocular Visual Fields Worksheet under "Total Visual System."

7) Calculate the visual system total whole person impairment by using *AMA Guides* Table 6 (p. 172) and document the value on the Monocular Visual Fields Worksheet under "Total Whole Person."

Binocular Visual Impairment without Motility Loss

Binocular visual field testing should not be performed when an ocular motility impairment is present.

1) Determine near and far *central visual acuity* in each eye.
2) Determine the total impairment for corrected acuity for each eye using *AMA Guides* Table 2 (p. 163) and document on the Binocular Visual Fields without Motility Loss Worksheet under "Central Acuity."
3) An additional 5-10% for "other ocular impairments" of the involved eye can be combined if it affects overall vision. If applicable, document the value on the Binocular Visual Fields Worksheet for the affected eye.Ocular impairments include:
    - vitreous opacities,
    - non-reactive pupil, and
    - light scattering disturbances.
4) Calculate total visual system impairment by using *AMA Guides* Table 5 (pp. 169-171) and document on the Binocular Visual Fields without Motility Loss Worksheet.
    - Read impairment of worse eye on the vertical axis of the chart and better eye on the horizontal axis. Calculate binocular visual field if appropriate.

5) Calculate binocular visual field, if appropriate, and document on the Binocular Visual Fields without Motility Loss Worksheet under "Binocular Visual Field."

6) Combine the visual field impairment with the acuity impairment using the Combined Values Chart (p. 254) and document the value on the Binocular Visual Fields without Motility Loss Worksheet under "Total Visual Impairment."

7) Calculate the total whole person binocular visual impairment using *AMA Guides* Table 6 (p. 172) and document on the Binocular Visual Fields without Motility Loss Worksheet under "Total Whole Person."

References/Links

Vision Impairment Worksheets: the use of the worksheets is optional. If worksheets are not used, the impairment rating calculations must be thoroughly explained in the narrative report.

Core Content: The evaluation of the visual system for impairment is based on three functions: corrected visual acuity for objects near and far, visual fields, and ocular motility.

Vision Impairment General Principles: In a workers' compensation case, the visual evaluation consists of corrected visual acuity, visual fields, and ocular motility.

Corrected Visual Acuity: for objects near and far
The physician must determine near and far central visual acuity in *each eye*.

- *Measure corrected and uncorrected vision,* ***but use corrected for ratings.***

The chart should be illuminated at a level of at least 5 foot-candles with *far vision* tested with the Snelling chart, Illiterate E chart or Landolt's broken-ring chart. *Near vision* should be tested at 14 inches, following the Revised Jaeger Standard.

Use *AMA Guides* Table 2 (p. 163) to determine the percent impairment of central vision loss for each eye. The upper number is the percent loss of central vision without allowance for monocular aphakia or monocular pseudophakia. The lower number is the percent loss of central vision with allowance for monocular aphakia or monocular pseudophakia.

Visual fields
The *AMA Guides* explains binocular field visual impairment first, however, monocular visual field impairment is the most frequently reported test.

When a field defect is suspected, *binocular visual fields* should be tested using:

- the Goldman kinetic outer isopter of the III/4e stimulus, *or*
- the arc perimeter exam using a 3 mm white test target at a radius of 330 mm.

Utilize Esterman grid (*AMA Guides* Figure 2A, p. 165) for determination of binocular field and transfer readings from field instrument to Grid.

- Count the dots outside or on the visual field line (*AMA Guides* Figure 2A, p. 165).
- Multiply the number of dots x ⅝ to determine the percentage of field loss.

Utilize *monocular field measurements*

- Measure total degrees of visual field retained.
- Use *AMA Guides* Table 4 (p. 167) to determine percentage of monocular field loss.

Ocular motility

If there is profound amblyopia or profound loss of visual acuity in one eye, clinical evaluation of motility should be used to determine impairment.

- Plot the presence of diplopia along the meridians of the visual field.
- Use *AMA Guides* Figure 3 (p. 168) to determine percentage loss.

Pitfalls

Permanent deformities of the orbit, scars and other cosmetic deformities that do not otherwise alter ocular function can receive up to an additional 10% rating of the whole person.

This rating is then combined with the total whole person impairment rating for the final rating.

Workshop Case:

Monocular Visual Fields: The following measurements are recorded for *central acuity* on the attached worksheet:

	OD Right	OS Left
Near Corrected	14/60	14/40
Far Corrected	20/40	20/30

Using the vision impairment worksheet, what is the total impairment for corrected acuity for each eye?

Vision Impairment Form
Monocular Visual Fields

Central Acuity:

	OD Right	OS Left
Near Uncorrected		
Near Corrected	**14/60**	**14/40**
Far Uncorrected		
Far Corrected	**20/40**	**20/30**
Total Impairment for Corrected Acuity (Table 2, p. 163)	1.	1.

Visual Fields: Field Sector and Degrees Lost

	OD Right	OS Left
Temporal		
Down Temporal		
Direct Down		
Down Nasal		
Nasal		
Up Nasal		
Direct Up		
Up Temporal		
Total Degrees Lost	**150**	**50**
Total Impairment (Table 4, p. 167)	2.	2.

Motility:

	OD Right	OS Left
Percentage loss assigned to worse eye (Fig. 3, p. 168)	3.	3.

If appropriate 5-10% of involved eye for other ocular impairments (e.g. vitreous opacities, non-reactive pupil, light scattering disturbances)	4.	4.

	OD Right	OS Left
Total Eye Loss: (1, 2, 3 and 4 combined) (combined values chart p. 254)		

Total Visual System: (Table 5, p. 169)	
Total Whole Person: (Table 6, p. 172)	

Answer: Use *AMA Guides* Table 2 (p. 163)- taking the top number

Central Visual Acuity Impairment:	**48**	**32**

Visual Fields: Field sector and degrees lost

	OD Right	OS Left
Total degrees lost:	150 degrees	50 degrees

What is the total impairment for visual fields for each eye?

Answer: Use *AMA Guides* Table 4 (p. 167)

Total Impairment for monocular visual field loss:	**30%**	**10%**

Ocular Motility:	OD Right	OS Left

What is the percentage loss assigned to worse eye?

Answer: Use *AMA Guides* Figure 3 (p. 168) for the worst eye in diplopia fields.
This would be the right eye:
Percentage/loss of *ocular motility*: **10%**

Total Eye Loss:

What is the total eye loss?

Answer:
OD Right:Using the Combined Values Chart (pp. 254-255), combine 48 (central acuity), 30% (visual fields) and 10% (ocular motility) = **68**
OS Left: Using the Combined Values Chart (pp. 254-255), combine 32 (central acuity) and 10 (visual fields) = **39**

Total Visual System:

What is the total visual system impairment?

Answer: Using *AMA Guides* Table 5 (p. 169) = **46%**

Total Whole Person Impairment:

What is the total whole person impairment?

Answer: Using *AMA Guides* Table 6 (p. 172)
15% Total Visual System = **43%**

Vision Impairment Form
Monocular Visual Fields

Central Acuity:

	OD Right	OS Left
Near Uncorrected		
Near Corrected	**14/60**	**14/40**
Far Uncorrected		
Far Corrected	**20/40**	**20/30**
Total Impairment for Corrected Acuity (Table 2, p. 163)	1. **48**	1. **32**

Visual Fields: Field Sector and Degrees Lost

	OD Right	OS Left
Temporal		
Down Temporal		
Direct Down		
Down Nasal		
Nasal		
Up Nasal		
Direct Up		
Up Temporal		
Total Degrees Lost	**150**	**50**
Total Impairment (Table 4, p. 167)	2. **30%**	2. **10%**

Motility:

	OD Right	OS Left
Percentage loss assigned to worse eye (Fig. 3, p. 168)	3. **10%**	3.

If appropriate 5-10% of involved eye for other ocular impairments (e.g. vitreous opacities, non-reactive pupil, light scattering disturbances)	4. **0**	4. **0**

	OD Right	OS Left
Total Eye Loss: (1, 2, 3 and 4 combined) (combined values chart p. 254)	**68**	**39**

Total Visual System: (Table 5, p. 169)	**46%**
Total Whole Person: (Table 6, p. 172)	**43%**

Vision Impairment Form
Monocular Visual Fields

Central Acuity:

	OD Right	OS Left
Near Uncorrected		
Near Corrected		
Far Uncorrected		
Far Corrected		
Total Impairment for Corrected Acuity (Table 2, p. 163)	1.	1.

Visual Fields: Field Sector and Degrees Lost

	OD Right	OS Left
Temporal		
Down Temporal		
Direct Down		
Down Nasal		
Nasal		
Up Nasal		
Direct Up		
Up Temporal		
Total Degrees Lost		
Total Impairment (Table 4, p. 167)	2.	2.

Motility:

	OD Right	OS Left
Percentage loss assigned to worse eye (Fig. 3, p. 168)	3.	3.

If appropriate 5-10% of involved eye for other ocular impairments (e.g. vitreous opacities, non-reactive pupil, light scattering disturbances)	4.	4.

	OD Right	OS Left
Total Eye Loss: (1, 2, 3 and 4 combined) (combined values chart p. 254)		

Total Visual System: (Table 5, p. 169)	
Total Whole Person: (Table 6, p. 172)	

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Vision Impairment Form
Binocular Visual Fields without Motility Loss

Central Acuity:

	OD Right	OS Left
Near Uncorrected		
Near Corrected		
Far Uncorrected		
Far Corrected		
Total Impairment for Corrected Acuity (Table 2, p. 163)	1.	1.

	OD Right	OS Left
If appropriate, 5-10% of involved eye for other ocular impairments (e.g. vitreous opacities, non-reactive pupil, light scattering disturbances)	2.	2.
Central Acuity (1) combined with % for ocular impairment (2)	3.	3.

Combine OD and OS central acuity values (3) using Table 5 (p. 169-171) to determine impairment of total visual system	4.

Binocular Visual Field Value:(Refer to Figure 2A&2B, p. 165) 5. _____

Total Visual Impairment

Combine acuity impairment (4) with binocular visual field value (5) using the Combined Values Chart (p.254)	
Total Whole Person: (Table 6, p. 172)	

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Ear, Nose, and Throat Impairment Ratings

AMA Guides 3rd Edition, revised - Chapter 9 (p. 173)

Objectives:

1. Locate the sections in the *AMA Guides* used to rate impairment for hearing, nasopharyngeal, mastication and deglutition, olfaction and taste, speech and facial disfigurement.
2. Determine the steps for performing a binaural and monaural hearing impairment, nose, throat and facial disfigurement impairment ratings.
3. Identify the parameters for rating tinnitus according to the *AMA Guides* and the Impairment Rating Tips.

Summary/Steps for Determining Hearing Impairment

1. Use audiometers (calibrated to ANSI specifications S3.6-1969) to determine decibels of hearing at 500, 1000, 2000 and 3000 Hertz.
    - Impairment rating is taken without hearing aids
    - If the hearing loss is less than 25 dB at these frequencies, there is no impairment. If the average of all four frequencies is greater than 91.7 dB, then the impairment is 100%.
2. **Add** the decibels determined at the four frequencies for each ear separately.
3. Determine the binaural impairment by plotting the worst ear loss against the better ear using *AMA Guides* Table 3, p. 176.
4. If tinnitus is rated: 3-5% may be added to the binaural hearing impairment.
    - Tinnitus can only be given when a hearing impairment is documented (*AMA Guides*, p. 110)
    - The hearing impairment need not be from the current injury (Impairment Rating Tips - Desk Aid #11, page 3)
5. Convert hearing loss to whole person by using *AMA Guides* Table 4, p. 178.
6. When appropriate, determine the monaural hearing impairment using the decibel sum of the hearing threshold levels using *AMA Guides* Table 2, p. 175.

Summary/Steps for Determining Equilibrium and Vestibular Impairments

1. Document the objective findings to determine the class of impairment using *AMA Guides* pp. 178-179.
2. Describe the interference of activities of daily living (ADL). (eg: difficulty bike riding versus the inability to ambulate without assistance)

Summary/Steps for Determining Facial Disfigurement Impairment

1. Refer to *AMA Guides* Section 9.2, p.179 in the *AMA Guides* to determine the Classes of Impairment.
2. Specific prominent facial disfigurements should be deemed to have the following maximum whole person impairment:

Disfigurement	% Whole Person Impairment
Unilateral Total Facial Paralysis	5
Bilateral Total Facial Paralysis	8
Loss or Deformity of Outer Ear	2
Loss of the Entire Nose	25
Nasal Distortions in Physical Appearance	5

Summary/Steps for Determining Nasopharyngeal Impairments

1. Determine the whole person impairment by using the classifications of Air Passage Defects found in *AMA Guides* Table 5, p. 181.

Summary/Steps for Determining Mastication and Deglutition Impairment

1. Determine the diet restriction and percentage impairment in whole person by referring to the chart in *AMA Guides* Chapter 9.3b, p. 180.

Summary/Steps for Determining Olfaction and Taste Impairment

1. Determine if the patient has a complete bilateral loss of smell or taste. If so, a 3% whole person rating is given (*AMA Guides* Chapter 9.3c, p. 180.)

Summary/Steps for Determining Speech Impairment

1. While interviewing the patient, observe the patient's speech in ordinary conversation while obtaining pertinent history.
2. Patient should read the Oral Reading Paragraph entitled "The Smith House" on p. 181 of the *AMA Guides.*
3. Examiner must have normal hearing.
4. Patient should be 8 feet from examiner with back towards the examiner.
5. Use *AMA Guides* Table 6, p. 182 to determine the Speech Classification for Audibility, Intelligibility, and Functional Efficiency.
6. Convert the worst rating of the three impairments to whole person impairment using *AMA Guides* Table 7, p. 183.
7. Associated behavioral changes may also be rated in Mental and Behavioral Disorders, *AMA Guides* Chapter 14, p. 235.
8. If the patient has the inability to read English or if English is not a first language, use the assistance of a speech pathologist.

References/Links

Impairment Rating Tips p.3: tinnitus
Hearing Impairment Worksheet

Hearing Impairment General Principles:
Impairment is based on audiometry. Since hearing impairment is based on hearing within the speech range, only 500,1000, 2000 and 3000 Hz are included.

Additional Information for Hearing Impairment from the Division's Impairment Rating Tips
Tinnitus: a 3-5% impairment may be added to the binaural hearing impairment for tinnitus, but it can only be **added** if a hearing impairment is documented. The hearing impairment need not be from the current injury.

Workshop Case:
The patient is a 65-year-old power plant worker who inconsistently used hearing protection during his 20 years of employment. He has no history of hunting, sharp shooting, military service or riding motorcycles. The following worksheet indicates his findings from your hearing examination.

Calculate the impairment.

Hearing Impairment Form

Section 1

	Right Ear		Left Ear	
500 Hz	**20**	db	**25**	db
1000 Hz	**25**	db	**30**	db
2000 Hz	**30**	db	**45**	db
3000 Hz	**40**	db	**60**	db
Total (Sum)		db		db

Section 2 - Binaural Impairment

Apply the db totals from Section 1 (sum of 500, 1000, 2000 and 3000 Hz) to Table 3 on p. 176-177. Apply the worse ear to vertical axis and better ear to horizontal axis. If totals are less than 100db, use the 100 on appropriate axis.

Total of worse ear from Section 1 (vertical axis)	
Total of better ear from Section 1 (horizontal axis)	
Total Binaural Hearing Impairment % (Table 3, p. 176-177)	
Tinnitus (added, pg. 110)	
Total Hearing Impairment	

Section 3 - Whole Person Impairment

Convert total % hearing impairment from **Section 2 to % whole person** (Table 4, p. 178)	

Section 4 - Monaural Impairment

	Right Ear	Left Ear
Convert total db from Section 1 for each ear (Table 2, p 175)		

Answer:

Step 1: Add the decibels for each ear: (Decibel sum of the hearing threshold (DSHL))

Right Ear		Left Ear
20	500 Hz	25
25	1000 Hz	30
30	2000 Hz	45
40	3000 Hz	60
115 DSHL		**160** DSHL

Step 2: Determine the binaural impairment by plotting the worse ear loss against the better ear using *AMA Guides* Table 3, p. 176.

Answer: **8.4%** binaural impairment

Step 3: No tinnitus

Step 4: Convert hearing loss to whole person by using *AMA Guides* Table 4, p. 178.

Answer: **3%** whole person

Step 5: Determine the monaural hearing impairment using the decibel sum of the hearing threshold levels using *AMA Guides* Table 2, p. 175.

Answer: Right ear: 115 DSHL = **5.6%** monaural hearing impairment
Left ear: 160 DSHL = **22.5 %** monaural hearing impairment

Hearing Impairment Form

Section 1

	Right Ear		Left Ear	
500 Hz	**20**	db	**25**	db
1000 Hz	**25**	db	**30**	db
2000 Hz	**30**	db	**45**	db
3000 Hz	**40**	db	**60**	db
Total (Sum)	**115**	db	**160**	db

Section 2 - Binaural Impairment

Apply the db totals from Section 1 (sum of 500, 1000, 2000 and 3000 Hz) to Table 3 on p. 176-177. Apply the worse ear to vertical axis and better ear to horizontal axis. If totals are less than 100db, use the 100 on appropriate axis.

Total of worse ear from Section 1 (vertical axis)	**160**
Total of better ear from Section 1 (horizontal axis)	**115**
Total Binaural Hearing Impairment % (Table 3, p. 176-177)	**8.4**
Tinnitus (added, pg. 110)	**0**
Total Hearing Impairment	**8.4**

Section 3 - Whole Person Impairment

Convert total % hearing impairment from **Section 2 to % whole person** (Table 4, p. 178)	**3**

Section 4 - Monaural Impairment

	Right Ear	Left Ear
Convert total db from Section 1 for each ear (Table 2, p 175)	**5.6=6**	**22.5=23**

Equilibrium and Vestibular Impairment General Principles

Dizziness can be subjective and may have multiple etiologies. It is not ratable unless there are objective findings. The *AMA Guides* provides five (5) classes of impairment from disturbances of vestibular function which are found on pp. 178-179. The classes of impairment are based on changes in ADLs and objective test findings.

- Class 1 provides 0% impairment as no objective findings are present.
- Classes 2-4 require objective findings for rating and are determined by the interference of ADLs. For example, the inability to ride a bike would be a Class 2 impairment.

Facial Disfigurement Impairment General Principles

The classes of facial disfigurement are defined by:

- Disorders of cutaneous structures
- Loss of support tissues
- Absence of anatomical areas
- Preclusion of social acceptance

The impairment percentages are meant to reflect interference with social and vocational activities. Refer to *AMA Guides* p. 179 for rating instructions. Class 1-4 use loss of support tissues and social acceptance as criteria for rating.

In addition, the following chart from *AMA Guides* Section 9.2, p. 179 details the impairment for various disfigurements:

Disfigurement	**% Whole Person Impairment**
Unilateral Total Facial Paralysis	5
Bilateral Total Facial Paralysis	8
Loss or Deformity of Outer Ear	2
Loss of Entire Nose	25
Nasal Distortions in Physical Appearance	5

If psychological behavioral changes occur due to facial disfigurement, see *AMA Guides* Chapter 14: Mental and Behavioral Disorders for an impairment rating.

Additional Information for Facial Disfigurement vs Scar Impairment Rating from the Division's Impairment Rating Tips

Facial disfigurement should be rated using *AMA Guides* Section 9.2, p. 179 in the *AMA Guides*.

Other scars should be rated using *AMA Guides* Section 13.6, p. 225. If the physician deems there is no impairment of activities according to the *AMA Guides*, the patient may go to the Administrative Law Judge (ALJ) to request further settlement specifically for the scar. Providers should be aware that not all scars qualify for an impairment rating.

Nasopharyngeal Impairment General Principles

Nasopharyngeal obstruction causing dyspnea is rated by four (4) classifications depending on the shortness of breath on exertion and various anatomical defects of the following:

- Oropharynx
- Laryngopharynx
- Trachea
- Nose
- Bronchi

This is the only area that allergic rhinitis can be rated using Class 1 (0-10%), *AMA Guides* Table 5, p. 181. This may be appropriate when a patient requires intermittent use of medication due to a work-related injury.

Mastication and Deglutition Impairment General Principles

Mastication and deglutition impairment is based on dietary limitations, for example, soft food, liquids or tube feedings.Physiologic findings should justify the need for dietary limitations.

This is the only section in the *AMA Guides* that can be used to rate the temporomandibular joint impairment or dietary problems secondary to dental issues.

The following chart on *AMA Guides* page 180 determines the whole person impairment:

Restriction	% Whole Person Impairment
The diet is limited to semi-solid or soft foods	5-10%
The diet is limited to liquid foods	20-30%
Ingestion of food requires tube feeding or gastrostomy	40-60%

Olfaction and Taste Impairment General Principles

Impairment is based on complete bilateral loss of either sense due to peripheral lesion. It is rare that the complete loss of the senses of olfaction and taste seriously affect an individual's ADLs.

3% whole person impairment is suggested for complete bilateral loss of olfaction or taste (*AMA Guides* Chapter 9.3c, p. 180.)

Speech Impairment General Principles

Impairment consideration is given only to the degree of impairment relating to the individual's efficiency in using speech to make himself or herself understood in daily living. Impairment of speech due to central nervous system pathology is rated in the Neurologic Chapter of the *AMA Guides*.

Only the highest of these components are chosen for impairment rating :

- Audibility - ability to speak at a level sufficient to be heard.
- Intelligibility - ability to articulate and to link the phonetic units of speech with sufficient accuracy to be understood.
- Functional efficiency- ability to produce a serviceably fast rate of speech output, and to sustain this output over a period of time.

Refer to the Summary/Steps for Determining Speech Impairment in this chapter of the Level II Accreditation Curriculum.

Worksheets

Hearing Impairment Worksheet

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Hearing Impairment Form

Section 1

	Right Ear	Left Ear
500 Hz	db	db
1000 Hz	db	db
2000 Hz	db	db
3000 Hz	db	db
Total (Sum)	db	db

Section 2 - Binaural Impairment

Apply the db totals from Section 1 (sum of 500, 1000, 2000 and 3000 Hz) to Table 3 on p. 176-177. Apply the worse ear to vertical axis and better ear to horizontal axis. If totals are less than 100db, use the 100 on appropriate axis.

Total of worse ear from Section 1 (vertical axis)	
Total of better ear from Section 1 (horizontal axis)	
Total Binaural Hearing Impairment % (Table 3, p. 176-177)	
Tinnitus (added, pg. 110)	
Total Hearing Impairment	

Section 3 - Whole Person Impairment

Convert total % hearing impairment from **Section 2 to % whole person** (Table 4, p. 178)	

Section 4 - Monaural Impairment

	Right Ear	Left Ear
Convert total db from Section 1 for each ear (Table 2, p 175)		

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Digestive, Urinary, Reproductive, Endocrine, and Hematopoietic Systems Impairment Ratings

AMA Guides, 3rd Edition, revised - Chapter 10 (p. 185), Chapter 11 (p. 197), Chapter 12 (p. 212), Chapter 7 (p. 153)

Objectives:

1. Identify the classifications of digestive system, urinary and reproductive system, endocrine and hematopoietic impairments.
2. List common elements used to determine impairment and its effect on function within the above chapters.
3. Identify areas in the *AMA Guides* to rate the following: impairment rating of digestive system, urinary and reproductive system, endocrine and hematopoietic systems.
4. Demonstrate the ability to perform an impairment rating for hernias.

Summary/Steps for Determining Digestive System Impairment:

All categories are determined by first establishing a diagnosis based on objective test findings.

Upper Digestive Tract Impairment

1. Determine desirable weight from previous medical records and patient history intake to identify if the weight before the onset of the patient's digestive illness is one that they consider "usual."
2. If the examiner is not able to determine by history or previous medical records a pre-illness "usual" weight, or if the patient is obese, *AMA Guides* Table 1, p. 186, is used to determine desirable weight.
3. Determine the classification and impairment of Upper Digestive Tract Impairments (esophagus, stomach, and duodenum, small intestine and pancreas) by using *AMA Guides* Table 2, p. 189.

Colon and Rectal Impairment

1. Determine if an impairment is ratable by reviewing the objective tests and anatomical loss, persistent bowel disturbance, restriction of daily activity, requirement for special diet and medication, and constitutional symptoms such as weight loss, fever, and anemia.
2. Determine the impairment by using *AMA Guides* Table 3, p. 191: Four (4) classifications for impairment.

Anal Impairment

- Determine the class of anal incontinence and utilize *AMA Guides* Table 4, p. 193 to rate the impairment.

Liver and Biliary Impairment

- After establishing objective evidence of the disease, consider nutrition and strength, and biochemical studies. Determine the impairment by referring to *AMA Guides* Table 5, p. 194.

Pancreas

- Determine the digestive effects of the pancreas and determine the class of impairment by referring to *AMA Guides* Table 2, p. 189.

Hernias

- Determine the impairment rating by referring to *AMA Guides* Table 6, p. 196. A rating can only be given when there is a palpable defect. Pay close attention to the "and's" and "or's" in Table 6.

Summary/Steps for Determining Urinary and Reproductive Systems Impairment:

Upper urinary tract

- Determine the class of impairment by referring to *AMA Guides* Table 1, p. 201.

Urinary Diversion

- Determine the impairment by referring to the Urinary Diversion Section of *AMA Guides* p. 201.

Bladder

- Determine the impairment by referring to *AMA Guides* Chapter 11.2, p. 202.

Urethra

- Determine the impairment by referring to *AMA Guides* Chapter 11.3, p. 203.

Male reproductive organs

- Determine the impairment by referring *AMA Guides* Chapter 11.4, pp. 204-206.
- Inability to reproduce constitutes a 20% impairment, however, this may be increased by 50% for males under 40 years old or decreased by 50% for males above 65 years old.

Female reproductive organs

- Determine the impairment by referring to *AMA Guides* Chapter 11.5, pp. 206-209.
- Inability to reproduce constitutes a 30-35% impairment.

Summary/Steps for Determining Endocrine System Impairment:

Hypothalamic Pituitary Axis

- Determine the class of impairment by referring to *AMA Guides* Chapter 12.1, pp. 212-215.

Thyroid

- Determine the class of impairment by referring to *AMA Guides* Chapter 12.2, pp. 215-216.

Parathyroids (hyperparathyroidism and hypoparathyroidism)

- Determine the class of impairment by referring to *AMA Guides* Chapter 12.3, pp. 216.

Adrenal Cortex (hypoadrenalism and hyperadrenocorticism

- Determine the impairment by referring to *AMA Guides* Chapter 12.4, pp. 216-217.

Adrenal medulla
- Determine the impairment by referring to *AMA Guides* Chapter 12.5, pp. 217-218.

Pancreas (insulin and glycogen production only)
- Determine the impairment by referring to *AMA Guides* Chapter 12.6, pp. 218-221.

Gonads (effects of hormonal changes only)
- Determine the impairment by referring to *AMA Guides* Chapter 12.7, pp. 221-222.

Mammary Glands
- Determine the impairment by referring to *AMA Guides* Chapter 12.8, p. 222.

Metabolic Bone Disease
- Determine the impairment by referring to *AMA Guides* Chapter 12.9, p. 222.

Summary/Steps for Determining Hematopoietic Impairment

Anemia - related to hemoglobin level and need for transfusions
- Determine the impairment by using *AMA Guides* Table 1, p. 154.

Polycythemia
- Determine the impairment by referring to *AMA Guides* Chapter 7.2, pp. 154-155.

White Blood Cell Disease or Abnormalities
- Determine the impairment by referring to the four (4) classes of impairment in *AMA Guides* Chapter 7.3, 7.4, pp. 155-158.

Hemorrhagic Disorders and Platelets
- Determine the impairment by referring to *AMA Guides* Chapter 7.5, pp. 158-159.

References:

Impairment Rating Tips

Core Content: All impairment rating criteria differ depending on the specific deficit the patient may have. See specific sections in the *AMA Guides* for rating each impairment.

Digestive System Impairment General Principles

Upper Digestive Tract: Use objective tests for determining the diagnosis. There are four classifications of impairment (*AMA Guides* Table 2, p. 189) and they are determined by considering:
- Loss of weight
- Dietary restrictions and drug use required
- Signs and symptoms of organic disease or anatomical loss

Colon and Rectal Impairment: Four classifications are found in *AMA Guides* Table 3, p. 191 when determining colon and rectal impairment. These classifications are determined by:
- Objective tests and anatomical loss
- Persistent bowel disturbance
- Restriction of daily activity

- Requirement for special diet and medication
- Constitutional symptoms such as weight loss, fever, and anemia

Anal Impairment: Three classifications for anal impairment are found in *AMA Guides* Table 4, p. 193 and depend on the degree of anal incontinence.

Liver and Biliary Impairment: Four classes of liver and biliary impairment are found in *AMA Guides* Table 5, p. 194 and depend on:
- Objective evidence of disease
- Nutrition and strength
- Biochemical studies

Pancreas: Four classes of impairment to rate for the digestive effects of the pancreas are found in *AMA Guides* Table 2, p. 189.
To rate the endocrine effect, consult *AMA Guides* Chapter 12, p. 211 - The Endocrine System.

Hernias: Three classifications for hernia impairment are found in *AMA Guides* Table 6, p. 196. Impairment is based on persistence and reducibility of the hernia and activity limitations.
- Incisional hernias are rarely painful or complicated and will not exceed Class 1.
- Inguinal and femoral hernias entail a greater risk with the impairment rating performed only after appropriate surgical repair, unless surgical intervention is not recommended for the patient.
- If a patient has surgery and no palpable defect is evident, then no impairment rating is given.

Additional Information for Rating Hernias from the Division's Impairment Rating Tips
- There must be a palpable defect in supporting structures of the abdominal wall for an impairment rating
    - *If there is continuing pain after surgery due to nerve impingement, this can be rated using AMA Guides Table 7, p. 114 in conjunction with Table 3, p. 112.*

Urinary and Reproductive Systems Impairment:
Upper urinary tract: Four classes of impairment are found in *AMA Guides* Table 1, p. 201. Impairment is based on:
- Creatinine clearance
- The 15 minute IV phenolsulfonphthalein (psp) test
- The need for medical treatment

Urinary Diversion: Impairment ratings for these surgical procedures are found in *AMA Guides* p. 201. They are evaluated as a part of, and in conjunction with, the assessment of the involved portion of the urinary tract and are combined with other urinary ratings.

Other subsections: Specific objective testing should be performed, when applicable, to determine the impairment of the following urinary and reproductive systems. Consult the following *AMA Guides* subsections to determine ratings:

- Bladder - Chapter 11.2, p. 202
- Urethra - Chapter 11.3, p. 203
- Male reproductive organs - Chapter 11.4, pp. 204-206
- Female reproductive organs - Chapter 11.5, pp. 206-209
- To rate hormonal effects: see Chapter 12 - the Endocrine system

Endocrine System Impairment:

Hypothalamic pituitary axis: three classes for impairment can be found in *AMA Guides* Chapter 12.1, pp. 212-215.
Thyroid: two classes for impairment can be found in *AMA Guides* Chapter 12.2, pp. 215-216.
Parathyroids: hyperparathyroidism and hypoparathyroidism impairment can be found in *AMA Guides* Chapter 12.3, p. 216.
Adrenal cortex: hypoadrenalism and hyperadrenocorticism impairment can be found in *AMA Guides* Chapter 12.4, pp. 216-217.
Adrenal medulla: pheochromocytoma impairment can be found in *AMA Guides* Chapter 12.5, pp. 217-218.
Pancreas: There are 2 classification systems: one for diabetes mellitus and a second for hypoglycemia, which can be found in *AMA Guides* Chapter 12.6, pp. 218-221.

- These are determined by insulin use and the secondary effects of diabetes..

Gonads: for effects of hormonal changes only impairment can be found in *AMA Guides* Chapter 12.7, pp. 221-222.
Mammary Glands: impairment information found in *AMA Guides* Chapter 12.8, p. 222.
Metabolic Bone Disease: impairment information found in *AMA Guides* Chapter 12.9, p. 222.

Hematopoietic Impairment

Anemia: impairment related to hemoglobin level and need for transfusions can be found in *AMA Guides* Chapter 7.1, p.154 with the use of Table 1, p. 154.
Polycythemia: impairment is based on leukocyte abnormality, medical treatment, and ADL interference and can be found in *AMA Guides* Chapter 7.3, 7.4, pp.155-158.
Hemorrhagic Disorders and Platelets: impairment information can be found in *AMA Guides* Chapter 7.5, pp.158-159.

Human Immunodeficiency Virus (HIV)

HIV does not have a specific chart for rating impairment in the *AMA Guides*. Refer to the white cell classification system in *AMA Guides* pp. 156-157.

Remember that all complications are rated separately. Thus, a patient with progressive HIV is likely to have impairment in multiple systems, which should be combined at the whole person level using the Combined Values Chart in *AMA Guides* p. 254.

Respiratory System Impairment Ratings

AMA Guides, 3rd Edition, revised - Chapter 5 (p. 115)

Objectives:

1) Determine the four pulmonary components used for assessing respiratory impairment.
2) Define the steps for performing a respiratory impairment rating.
3) Explain exercise capacity testing with VO_2 max and arterial blood gas. determination for calculating respiratory impairment.
4) Describe how to perform a respiratory impairment rating with a patient who has asthma.

Summary/Steps for Determining Respiratory Impairment Ratings

1. Obtain the patient's age, gender, and height in centimeters
2. Determine the predicted normal FVC, FEV_1, and D_{CO} values using *AMA Guides* pp. 118-123:
    - Men: *AMA Guides* Table 2 (FVC), Table 4 (FEV_1) and Table 6 (D_{CO})
    - Women: *AMA Guides* Table 3 (FVC), Table 5 (FEV_1) and Table 7 (D_{CO})
    - For non-caucasian populations, predicted spirometry norms should be estimated at 0.9 of those shown in *AMA Guides* Tables 2-5.
3. Determine the patient's best effort values of FVC, FEV_1, and D_{CO} obtained from the spirometry results.
4. Calculate the patient's predicted percentage of:
    - FVC: $\frac{\text{Patient's best effort value}}{\text{predicted value}} \times 100$
    - FEV_1: $\frac{\text{Patient's best effort value}}{\text{predicted value}} \times 100$
    - FEV_1/FVC ratio
    - D_{CO} : $\frac{\text{Patient's best effort value}}{\text{predicted value}} \times 100$
        - At least one of these four values must be abnormal to consider an impairment.

5. Using the four values, identify the highest impairment rating class from *AMA Guides* Table 8, p. 125 to determine the whole person impairment rating.

6. Exercise testing is rarely necessary, however, if this best reflects the patient's function, the maximum oxygen consumption (VO_2 max) data can be used when calculating the whole person impairment rating.

References/Links

No worksheet needed, please provide details of impairment rating in the narrative report.

Core Content: Respiratory impairment incorporates a combination of pulmonary functional test values. The *AMA Guides* rely mainly on pulmonary test results as a percent of predicted normal values and the respiratory symptom severity.

Respiratory Impairment General Principles

The principal components for assessing impairment include the medical history, physical examination, and measurements of pulmonary physiology.

Medical history

The physician should confirm the disease diagnosis and inquire about:

- Dyspnea (see *AMA Guides* Table 1, p. 116 for classification of severity)
  - A specific example of activities that cause dyspnea should be noted, such as the ability to climb stairs, walk distances and tolerance of activity at higher altitudes.
- Cough/sputum
- Wheezing
- Environmental/occupational exposures
- Tobacco Use
- Job chronology (specific exposures to inhaled dust, fumes, gases and vapors)
- Hobbies with such exposures

Physical examination

The examination should focus on both the cardiac and respiratory systems as well as the following key peripheral signs:

- Breathing rate and pattern
- Lung sounds (wheezes, rales, rhonchi)
- Signs of cor pulmonale (increased P_2 component of S_2, tricuspid regurgitation, parasternal lift, jugular venous distention)
- Edema
- Cyanosis
- Clubbing

Pulmonary physiology testing

Spirometry (FEV_1, FVC, FEV_1/FVC ratio) and diffusing capacity are the main tests used to determine the impairment rating. Arterial blood gases and exercise capacity testing can also be utilized.

Spirometry and diffusing capacity must be performed in accordance with the American Thoracic Society (ATS) standards.

Spirometry should be performed both pre- and post-bronchodilator with best effort from the patient. The following data should be obtained for estimating impairment:

- Forced vital capacity (FVC)
- Forced expiratory volume at 1 second (FEV_1)
- FEV_1/FVC ratio

Diffusing capacity of Carbon Monoxide (D_{CO}) is an indirect measure of pulmonary gas exchange and can be helpful in estimating impairment related to interstitial lung diseases. This test may be insensitive compared to more direct measurements of gas exchange during exercise, however, it is less invasive.

Interpretation of simple spirometry and D_{CO}
Obstructive diseases produce low FEV_1 and low FEV_1/FVC ratio. In asthma, D_{CO} is preserved; in emphysema it is decreased.

Restrictive diseases (coal worker's pneumoconioses, silicosis, and asbestosis) produce a low FVC and low D_{CO} but the FEV_1 and FEV_1/FVC ratio are normal.

In significant emphysema, the FVC may appear low because of lung hyperinflation. Note that high residual volume is not measured by simple spirometry.

Disorders that produce a "mixed" obstructive and restrictive pattern (hypersensitivity pneumonitis and some cases of pneumoconiosis) are difficult to interpret with spirometry alone, because the FEV_1 and FVC may both be low with $\pm$ D_{CO} low.

Chest radiograph
The chest radiograph and/or pulmonary imaging are important in diagnosing and assessing onset and progression of disease, but it does not correlate well with lung physiology in many circumstances and with an individual's ability to work.
The International Labor Organization (ILO) Classification of Radiographs of Pneumoconioses is a standard system for the assessment of chest radiograph severity, but it is not used in the estimation of impairment.

Example Case: 52-year-old white male with berylliosis, 180 cm tall. His current job is a supervisor without work limitations. He is able to climb two flights of stairs and walk up to one mile at a slow pace with his friends. After a mile, he needs to slow his pace but can continue walking. He is not taking any medications.

His best effort spirometry values:

- FVC = 3.6 L
- FEV_1 = 2.8 L
- D_{CO} = 24.4 ml/min/mm Hg

Calculate the impairment.

Answer:

1. FVC: *Apply AMA Guides Table 2, p. 118*:
   $\frac{\text{3.6 L(patient's best value)}}{\text{5.04 L (predicted)}} \times 100 = 71\%$

2. FEV_1: *Apply AMA Guides Table 4, p. 120*:
   $\frac{\text{2.8 L (patient's best value)}}{\text{3.99 L (predicted)}} \times 100 = 70\%$

3. $FEV_1/FVC = \frac{\text{2.8 L}}{\text{3.6 L}} = 78\%$

4. D_{CO}: *Apply AMA Guides Table 6, p. 122*:
   $\frac{\text{24.4 ml/min/mm Hg (patient's best value)}}{\text{36.6 ml/min/mm Hg (predicted)}} \times 100 = 67\%$

5. Using *AMA Guides Table 8, p. 125*: Class 2, mild impairment with values between 10-25% for whole person impairment. The FVC, FEV_1 and D_{CO} values fall into Class 2. Given this patient's history, he would probably be in the mid-category range or 18-20% impairment.

Pitfalls

Disorders that produce a "mixed" obstructive and restrictive pattern (such as hypersensitivity pneumonitis and some cases of pneumoconiosis) are difficult to interpret using spirometry alone. Therefore, exercise testing may provide useful information about a patient's work capacity and can help identify limitation due to respiratory or cardiovascular disease, or both.

Exercise Testing:

The *AMA Guides* do not specify a single protocol for exercise capacity testing (e.g. bicycle versus treadmill).

The exercise testing result used to rate respiratory impairment is the workload achievable. It is expressed as the maximum oxygen consumption (VO_2 max) or as METS (1 MET=3.5 ml/kg●min VO_2) - See *AMA Guides* Table 2, p.129.

If the exercise test is performed with pre- and end-exercise arterial blood gases (ABG) (preferably with an indwelling arterial catheter), information about gas exchange can be obtained. However, the ABG determination is not part of the exercise capacity protocol outlined in the *AMA Guides.*

Not every patient with respiratory disease will require assessment of exercise capacity.

Indications for exercise testing include:

- Dyspnea symptoms that are greater than what spirometry or D_{CO} would indicate
- Patient reports inability to perform specific job due to breathlessness
- Submaximal or incorrect performance of spirometry or D_{CO}

Contraindications for Exercise Testing:

- Severe impairment already found by spirometry and D_{CO}
- Medical contraindications to exercise, such as heart disease, arrhythmias
- Other physical limitations that preclude accurate testing

Interpretation of Exercise Capacity Testing

Interpretation of the data should be performed by a physician with experience in exercise physiology because results can be greatly affected by a patient's effort, metabolic state, level of conditioning, and by heart, lung, neurologic, neuromuscular and orthopedic disorders.

VO_2 max may be used to determine the impairment. (See *AMA Guides* Table 8, p. 125). A VO_2 max <15 ml/kg min is not the only criteria for severe impairment. It must be taken in context with other information about the patient's disease and other contributing diseases.

As a general rule, if working at his or her own pace, a person can work 8 hours per day if they do not exceed 40% of their VO_2 max.

Example Case:

Patient with asbestosis reports severe, "incapacitating" dyspnea on exertion which seems out of proportion to his spirometry and D_{CO}. Exercise capacity testing shows good effort, normal cardiovascular response, and decreased exercise capacity. He was limited by ventilatory and gas exchange abnormalities, consistent with the asbestosis diagnosis. He works in shipping and receiving, which requires him to lift 20-50 pound boxes frequently and reports extreme dyspnea after 1-2 minutes of this activity. He is currently off work.

The patient's values are indicated below:

- FVC = 61%
- FEV_1= 70%
- FEV_1/FVC = 88% **or** D_{CO} = 67%
- VO_2=15.9 ml/kg● min

Using AMA Guides Table 8, p. 125, the measurements would place this patient in the following categories:

- FVC = 61% : placing patient in Class 2
- FEV_1= 70% : placing patient in Class 2
- FEV_1/FVC = 88% **or** D_{CO} = 67%: placing patient in Class 2
- VO_2=15.9 ml/kg● min: placing patient in Class 3

In which class of impairment would you place this patient?

Answer:

In this case, based on the exercise testing result of VO_2 measurements, the patient would be placed in Class 3 respiratory impairment (30-45% whole person impairment.) If the patient is rated with 40% impairment, his current job requires him to work in excess of 40% of his predicted VO_2 max, making it unlikely that he is suitable for such strenuous work.

A VO_2 max of 15.9 ml/kg●min, corresponds with approximately 4.6 METS. Based on *AMA Guides* Table 2 (p. 129), we estimate this to be in the range of METS seen in symptomatic patients and not in physically active individuals. *AMA Guides* Table 2 (p. 129) can be useful when determining the category of work the patient can tolerate.

Arterial Blood Gas (ABG)

Arterial blood gas can be measured at rest and during maximal exercise. ABG determination at rest is not a routine part of impairment assessment per the *AMA Guides.* ABG determination is based on clinical judgment and reserved for selected cases or if hypoxemia is suspected.

The *AMA Guides* suggest documenting hypoxemia twice, four weeks apart, prior to using the data in estimating impairment to establish validity.

The *AMA Guides* do not make a statement about the value of serial ABG's obtained during exercise testing, except that they can be performed if hypoxemia is suspected.

Interpretation of ABG

Per the *AMA Guides*, ABG indicates severe impairment when:

- Resting pO_2< 60 mm Hg on room air and
- The patient is stable on optimal therapy and
- The patient has one or more of the following secondary conditions:
    - Pulmonary hypertension
    - Cor pulmonale
    - Erythrocytosis
    - Worsening hypoxemia during exercise

    OR
- Resting pO_2 < 50 mm Hg on room air by itself is a criterion for severe impairment.

The *AMA Guides* do not take into account the alveolar-arterial oxygen gradient $(A\text{-}a)DO_2$ nor do they make an adjustment for altitude. The normal range for pO_2 is lower at Colorado's elevations and the normal range for pO_2 in Denver (5,280 feet) is 65-75 mm Hg.

Asthma - Asthma is not addressed in the *AMA Guides, 3rd edition, revised* so the American Thoracic Society Standards are utilized when calculating impairment ratings. The following steps are used when assessing impairment ratings due to asthma:

- Assess when optimally treated
- Use post-bronchodilator spirometry values
- Three successive tests, at least one week apart
- Thoroughly document asthma, precipitating exposure, and reports from coworkers/supervisors to help determine employability. May require removal from exposure.
- Use American Thoracic Society (ATS) Standards: *See "Guidelines for the Evaluation of Impairment/Disability in Patients with Asthma" article at the end of the Respiratory chapter in this curriculum to determine the ATS impairment class determination.*
    - ATS Standards Table 1: post-bronchodilator FEV_1 (Scored 0-4)
    - ATS Standards Table 2: percent change in FEV_1 OR PC20 FEV_1 mg/ml (Scored 0-3)
    - ATS Standards Table 3: minimum medication needs (Scored 0-4)
    - ATS Standards Table 4: summary impairment rating based on sum of scores of Tables 1-3.
- Translate the total score from ATS Standards Table 4 to the AMA table below to determine the whole person impairment rating.

Translating ATS to American Medical Association (AMA)

ATS Asthma Score	Impairment Class	Whole Person Impairment
0	1	0%
1-5	2	10-25%
6-9	3	26-50%
10-11	4	51-100%

(FEV_1< 50% on 20 mg/d/prednisone)

Respiratory Ailments not Directly Related to Lung Function:
Certain respiratory conditions may cause impairment that is not quantifiable by spirometry, diffusing capacity or measured exercise testing. These include:

- Asthma
- Hypersensitivity pneumonitis
- Pneumoconiosis
- Sleep disorders
- Lung cancers

The evaluations of these conditions should be performed by physicians with experience in lung disease with final impairment rating determined by the physician's judgment.

AMA Guides Table 9, p. 126 highlights these conditions with general comments as below:

Hypersensitivity pneumonitis

- Requires removal from exposure to avoid recurrence and chronic disease.

Pneumoconioses

- May not cause impairment but usually requires removal from exposure to the dust that caused the condition.

Sleep disorders

- Obstructive sleep apnea, central sleep apnea, and Cheyne-Stokes respiration can result in impairment through hypersomnolence, hypoxia, hemodynamic changes, or personality disorders
- Impairment due to sleep disorders should be evaluated according to criteria in *AMA Guides* Chapters 4 (nervous system), 6 (cardiovascular system), and 14 (mental/behavioral). These values are combined using the Combined Values Chart, p. 254.

Lung cancers

- Consider severity impaired at time of diagnosis and how long the patient has had the disease.
- If the patient is disease free at one year after the diagnosis, then the impairment rating should be performed according to physiologic parameters in *AMA Guides* Table 8, p. 125.
- If recurrence, immediately consider patient severely impaired.

Neurologic disorders

- Respiratory impairment due to neurologic disorders is rated in under *AMA Guides* Table 1, p. 109 - Column B: Brain (consciousness disturbances).

Workshop Case
Mr. H.R. is a 50-year-old white male automotive mechanic who presents with a chief complaint of dyspnea on exertion.

Dyspnea has been present for approximately five years and is gradually progressing. He now gets short of breath climbing one flight of stairs and had to quit mowing the lawn due to dyspnea. He denies cough, sputum production, hemoptysis, wheezing, chest pain, fever, or weight loss. He reports no orthopnea, paroxysmal nocturnal dyspnea or pedal edema. He has no history of chronic bronchitis, emphysema, asthma, pneumonia, chest trauma or chest surgeries, heart diseases. No rheumatologic complaints.

He is a former 25 pack-year cigarette smoker who quit ten years ago at the encouragement of his children. Hobbies include hunting, fishing, and television. No pets. No illicit drug use. Family history is noncontributory.

From 1980 to the present time he has worked as an automotive mechanic for three different companies. He specialized in brake repair until 1986, when he took over as manager of the business. He reports that up until then, he had almost daily exposure to airborne dust generated when he would remove old brake shoes and air-hose the brakes before replacing them. He wore no respiratory protection. The garages were usually poorly ventilated “except in the summer when we would open a garage door.” He has never worked in or near a body shop and he did no spray painting of vehicles. He has never served in the armed forces, worked in a mine or in the textiles industry. In his managerial job, he spends 80% of his day behind a desk or counter and no longer does “hands-on” automotive work.

His family physician obtained a chest radiograph when he told her about his shortness of breath. It showed bilateral calcified pleural plaques and reticulonodular interstitial infiltrates mainly in the lower and mid lung fields. No bullous changes or hyperinflation. No masses. Normal heart size. No adenopathy. His physician advised him that he has “interstitial lung disease” that probably was caused by working in a dusty environment and that he should file for workers’ compensation.

Examination:
Positive findings:
Bibasilar “velcro” rales
No digital clubbing or cyanosis
Stool guaiac was negative of blood

Chest radiograph:
Bilateral calcified pleural plaques seen in profile on PA film along the lateral aspects of the mid-chest and along the diaphragm. Irregularly-shaped opacities were seen in mid- and lower lung fields, bilaterally, which (by International Labor Organization

Classification) were read by a B reader as “consistent with pneumoconiosis: opacity shape/size s/t, profusion ½”

Questions:

1. **What is the probable diagnosis?**

   Answer: Asbestosis and asbestos-related pleural plaques
   The history of asbestos exposure (brake lining materials), the latency between time of first exposure and onset of clinical illness, the typical radiographic, physiologic and clinical signs make it medically probable that he has asbestosis. Most clinicians require no further diagnostic testing to make this diagnosis.

2. **What treatment is indicated?**

   Answer:
   There is no effective, curative treatment available. Pulmonary rehabilitation would help him maintain some functional capacities and improve his ability to perform activities of daily living. He needs careful follow up for evidence of pulmonary hypertension, cor pulmonale, cancers of respiratory tract, pleura, gastrointestinal tract.

3. **Has the patient reached a point of maximal medical treatment?**

   Answer:
   Yes, he is at a point of maximal medical improvement. With such chronic progressive diseases that are not responsive to therapy, there is no reason to anticipate spontaneous improvement. It is more likely that he will progress to greater impairment over time.

Additional Information:

Pulmonary physiology:

Age - 50 years old
Height – 178 cm
Weight – 85 Kg
Altitude – 5,280 feet

Spirometry:

FEV_1	2.80 L
FVC	3.10 L
FEV_1/FVC	90%
D_{co} (ml/min/mm Hg):	24.9

Questions:

4. Assuming he has reached the point of maximal medical improvement, calculate his permanent impairment of the whole person due to his lung disease, using the *AMA Guides, 3rd Ed. Revised*.

Answer: Calculation of impairment is performed using *AMA Guides*:
Table 2, p. 118 to find the predicted value for FVC
Table 4, p. 120 to find the predicted value for FEV_1
Table 6, p. 122 to find the predicted value for D_{CO}
The percent predicted for each category is calculated by dividing the observed value from the predicted value.

Spirometry	Observed	Predicted	% Predicted
FVC	3.10 L	**4.96 L**	63%
FEV_1	2.80 L	**3.96 L**	71%
FEV_1/FVC	90%		
D_{CO}	24.9	**36.2**	69%

Utilizing *AMA Guides* Table 8, p. 125 determine the class of respiratory impairment from the data established.

These tests show restrictive physiology and low diffusing capacity which, taken alone (without results of exercise testing) suggest Class 2 (10-25%) mild impairment of the whole person.

5. The patient's symptoms seem out of proportion to this observed spirometry and D_{co}. Are there other tests that should be performed to help explain this paradox?

Answer: In some patients with interstitial lung diseases, such as asbestosis, simple spirometry, D_{CO}, and x-ray may be insensitive and often correlate poorly with the degree of dyspnea and other symptoms.
Under such circumstances, the *AMA Guides* recommend that the patient's exercise capacity be assessed, using one of several available techniques. Testing should be

interpreted by a physician experienced in the use of this tool, with particular attention given to the patient's effort, cooperation, and ability to perform exercise.

In this case, the patient's test was performed using a cycle ergometer. Although not required for purposes of impairment rating, it was felt to be medically important to know his arterial blood gases at rest and during exercise. Patients with asbestosis-related exercise limitation typically have ventilatory abnormality and their gas exchange worsens with increasing workload.

Additional Information

Exercise capacity testing was performed. He achieved 85% of predicted maximal heart rate and the physician was satisfied that the patient gave his maximal effort. The following data were obtained:

VO_2 maximum (ml/kg min):		18.0 (approximately 5 METS)
EKG at rest and exercise		normal
ABG at rest:	pH	7.40
(room air)	pCO_2	33 mm Hg
	pO_2	60 mm Hg
ABG at max exercise:	pH	7.34
	pCO_2	28 mm Hg
	pO_2	48 mm Hg

Additional data from this test indicated that the patient's cardiovascular response to exercise was normal, but that he had a ventilatory abnormality, with difficulty increasing his tidal volume (as is seen in patients with stiff, non-compliant lungs due to interstitial lung disease).

6. What table in the *AMA Guides* should be used to help incorporate the results of this exercise test into your impairment rating? What class of impairment would the patient be in, based on the exercise test alone?

Answer: AMA Guides Table 8, p. 125. VO_2 max of 18.0 is consistent with class 3 (30-45%) moderate impairment of the whole person.

7. How does the patient's arterial blood gas analysis affect your impairment rating?

Answer: The arterial blood gases are abnormal. There is mild hypoxemia at rest (for the altitude at which it was measured). There is severe hypoxemia with exercise. These data are consistent with the diagnosis of interstitial lung disease and help explain the patient's dyspnea with exertion. Because of this result, the patient was placed on supplemental oxygen therapy.
With regard to the impairment rating, the arterial blood gases support what we already know from this VO_2 max – that the patient is moderately impaired. The *AMA Guides* are not clear in their recommendations about how to use ABG data.

8. What do you estimate this patient's permanent impairment of the whole person to be due to his respiratory disease?

Answer: According to Table 8, p. 125, the impairment rating can be a high Class 2 or a low Class 3 (25-35%.) The variability depends largely on the extent to which the raters weighed the exercise data/symptoms against spirometry and D_{CO}.

American Thoracic Society
MEDICAL SECTION OF THE AMERICAN LUNG ASSOCIATION

Guidelines for the Evaluation of Impairment/Disability in Patients with Asthma

BACKGROUND

The 1982 and 1986 American Thoracic Society (ATS) statements (1, 2) on the evaluation of impairment and disability caused by respiratory disorders were primarily of relevance for patients with respiratory disorders associated with irreversible damage. Asthma was dealt with only as a modifying condition. Patients with asthma have features that differ from other respiratory disorders, including: (1) The condition is characterized by variable airflow obstruction and the individual's clinical status varies from time to time; (2) the airflow limitation is partially or completely reversible with appropriate therapy; (3) the condition is associated with airway hyperresponsiveness to irritants such as dusts, fumes, gases, or smoke; (4) in many cases, environmental or occupational exposure to specific sensitizers provokes airway inflammation, which, on repeated exposure may become chronic and irreversible. Specific guidelines for patients with asthma are necessary because of these features.

PURPOSE

The purpose of this statement is to provide specific guidelines for the determination of impairment and disability in subjects with asthma for use by health professionals and disability boards. It takes into consideration not only impairment related to reduced lung function but other parameters, such as the degree of airway hyperresponsiveness and the type and amount of medication required to control symptoms, which are important reflections of the severity of asthma (3). This statement does not address the methods of identification of the cause of asthma.

DEFINITIONS

The definitions used by the previous ATS statement (2) will be used here.

Impairment is defined as a functional abnormality resulting from a medical condition. It may or may not be stable at the time the evaluation is made, and may be temporary or permanent. Impairment that persists after appropriate therapy, with no prospect of future improvement, is permanent. Some impairments are not dependent on lung function, but are related to the prognosis (e.g., unresectable lung cancer) or to public health considerations (e.g., tuberculosis) or inability to work in the same environment that causes asthma (e.g., occupational asthma).

Disability is a term used to indicate the total effect of impairment on the patient's life. It is affected by diverse factors such as age, sex, education, economic and social environment, and the energy requirement of the occupation.

Two people with identical impairment may be differently affected in their life situations. The rating of health impairment is within the jurisdiction of a physician's expertise to quantitate. However, the determination of disability also requires consideration of many nonmedical variables. Physicians, however, generally have considerable knowledge about how impairment affects their patients' lives. Therefore it is important for physicians to identify all the individual factors modifying the impact of impairment on their patients' lives for administrators who determine disability compensation.

DIAGNOSIS OF ASTHMA

Asthma should be suspected in the presence of a compatible history of cough, sputum, wheeze, chest tightness, or breathlessness, particularly when the symptoms are episodic and worse at night (4). The diagnosis of asthma requires both relevant symptoms (currently or by history) and the presence of airflow limitation that is partially or completely reversible either spontaneously or after treatment, or the presence of airway hyperresponsiveness to methacholine or histamine in the absence of airflow limitation.

In the presence of severe airflow limitation, it may not be possible to distinguish between asthma and other types of obstructive lung disease. Additional diagnostic criteria should be considered such as the presence of blood or sputum eosinophilia.

METHODS

Measurement of Spirometry

Spirometric measurements should be carried out using equipment, methods of calibration, and techniques that meet the criteria outlined in the most recent revision (5) of the ATS official statement on standardization of spirometry (6), or subsequent revisions of that statement, whichever is most current. The measurement of height, prediction equations, and corrections for racial differences should follow those outlined in the ATS official statement on "Lung Function Testing: Selection of Reference Values and Interpretational Strategies" (7).

Spirometric measurements should be made, if possible, after withholding inhaled bronchodilators for 6 h and long-acting bronchodilators (e.g., long-acting theophylline preparations) for 24 h. However, if it is not possible to withhold bronchodilators for this period of time, they can be used, but the time these medications are taken before the test should be noted. Antiinflammatory preparations such as cromolyn, inhaled or systemic corticosteroid should not be withheld.

FEV_1, FVC, and FEV_1/FVC should be determined from spirometry. When airflow limitation is present, i.e., FEV_1/FVC is less than the lower limit of normal, which is defined as the lowest 5% of the reference population (7), spirometry should be repeated after the administration of an inhaled β-adrenergic agonist. An improvement in FEV_1 of 12% or greater, with an absolute change of at least 200 ml, from the baseline level, confirms that there is significant reversibility, and together with the appropriate history, the diagnosis of asthma (7). When the improvement in FEV_1 is < 12%, a steroid trial should be given. This can be given as high-dose inhaled steroid (> 800 mcg beclomethasone or equivalent/day) although prednisone 30 to 40 mg for a period of 1 to 2 wk may

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be required in some patients. An improvement in FEV_1 of 20% with steroid trial also confirms the presence of asthma. When airflow limitation is absent, i.e., FEV_1/FVC is above the lower limit of normal (7), the level of airway responsiveness should be determined.

Measurement of Airway Responsiveness

Measurement of airway responsiveness is needed for the diagnosis of asthma and for impairment rating when the subject has no current objective evidence of airflow limitation. When the baseline FEV_1 is below 70% of predicted, response to the inhaled β-adrenergic agonist and not the measurement of airway responsiveness is the appropriate test to establish the diagnosis of asthma (8).

Measurement of airway responsiveness should be made by methacholine or histamine inhalation test using standardized methods (9–11). It is imperative that standardized methods be used in order to adequately interpret the results. The test should be done after withholding inhaled short-acting β-adrenergic agonist or ipratropium for 6 h and long-acting β-adrenergic agonist or theophylline for 24 h; in the case of histamine tests, short-acting antihistamines should be withheld for 48 h and astemizole for 1 or 2 months. Antiinflammatory preparations should not be withheld because withdrawal of these for a few hours does not influence measurement of airway responsiveness to histamine or methacholine, whereas prolonged withdrawal of these drugs can lead to an exacerbation of asthma. The subjects should be asked to refrain from smoking and exposure to cold air for two hours before the test.

The results should be expressed as the provocation concentration to cause a fall in FEV_1 of 20% (PC_{20} or PD_{20}) (9). Airway hyperresponsiveness is considered to be present when the PC_{20}

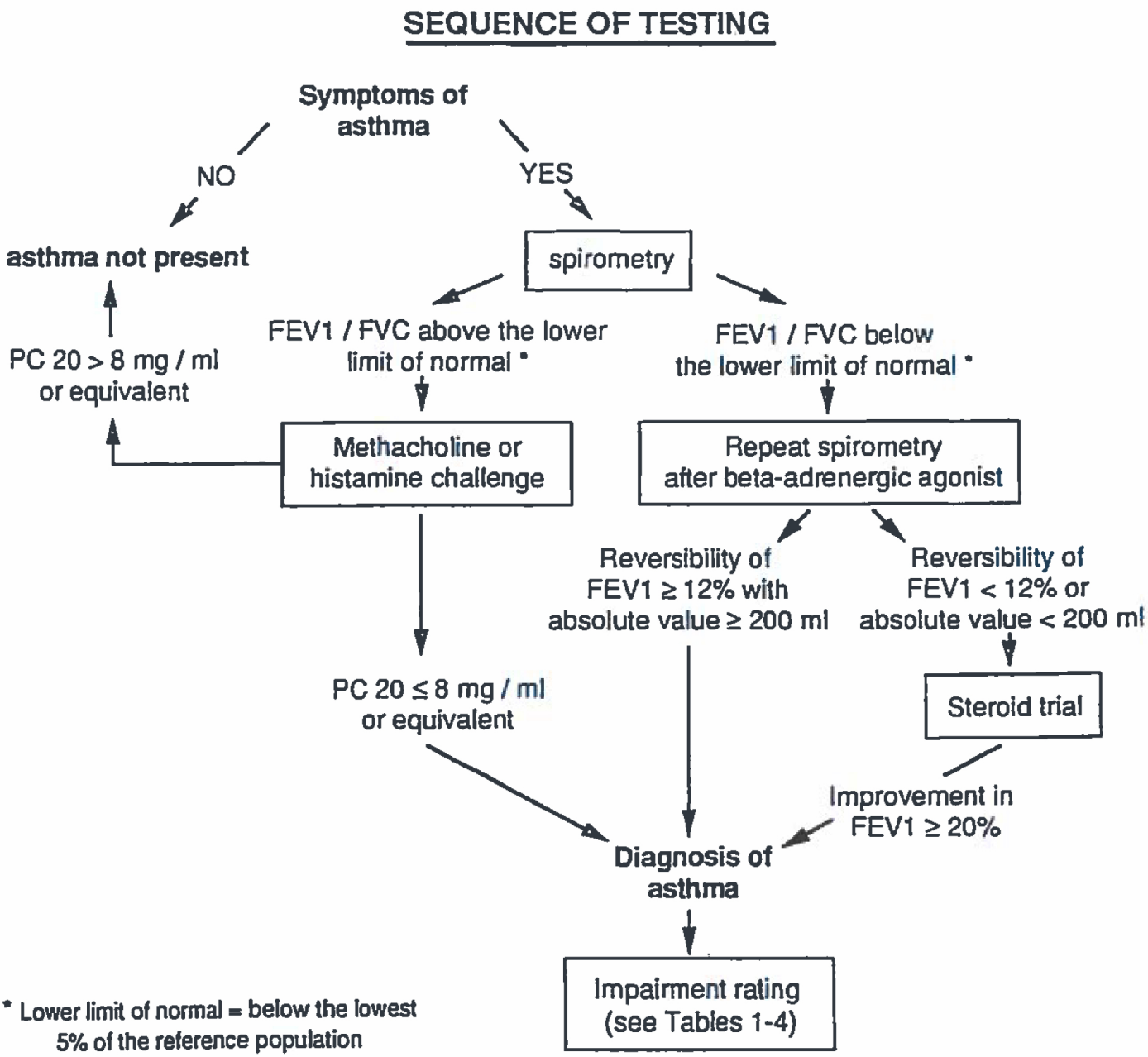

Figure 1. Sequence of testing.

is ≤ 8 mg/ml methacholine or histamine using the tidal breathing method or its equivalent when other standard methods are used (10–12).

Exercise Test

Exercise testing should not be done routinely in the investigation of asthma. However, many physicians perform spirometry before and after exercise testing in the investigation of dyspnea. If a subject has been shown to have a 15% or more decline in FEV_1 from the baseline level after exercise, this information will be useful in the assessment of impairment, particularly if the level of effort is similar to their usual work or daily activities.

Measurement of Diffusing Capacity and Lung Volumes

These measurements are necessary only to distinguish asthma from other conditions. They are not required for impairment evaluation in patients with asthma.

PROCESS OF EVALUATION

The sequence of testing to be performed is defined in figure 1, while figure 2 shows the process of evaluation. There are two types of impairment/disability, temporary and permanent. Temporary impairment/disability refers to a situation that is likely to change. For example, the individual may be expected to improve so that the

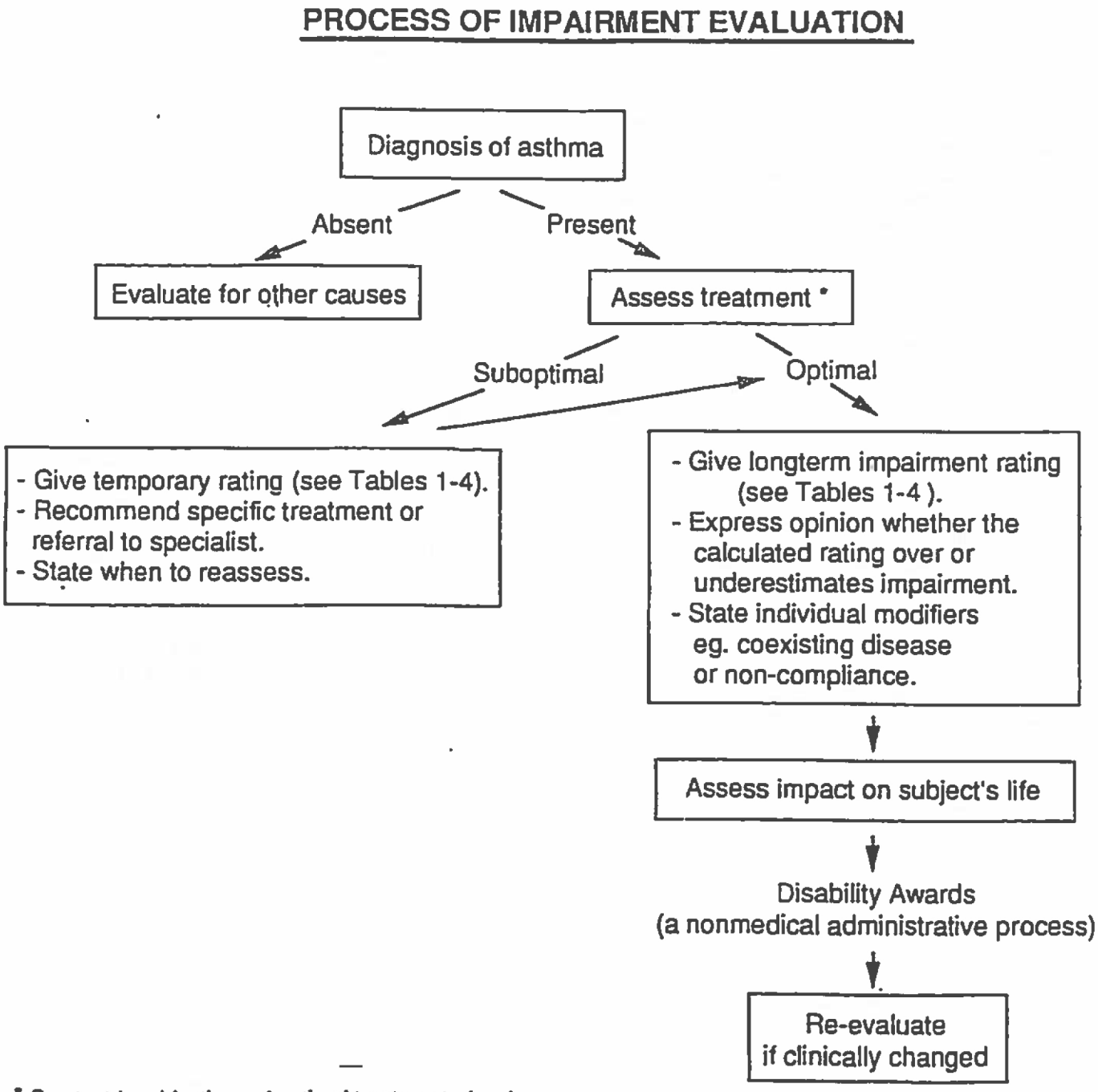

Figure 2. Process of impairment evaluation.

current functional status does not describe the anticipated future status. Temporary impairment/disability can be evaluated from the results of tests used to establish the diagnosis of asthma. Permanent impairment/disability refers to a situation when the individual has reached maximal medical improvement and is receiving optimal therapy. Evaluation for permanent impairment/disability should be done after the objectives of optimal treatment of asthma have been attained.

The objectives of treatment include the following (4):

1. To achieve control or the best overall results (least symptoms, least need for β-adrenergic agonist when taken only if required, best expiratory flow rates, least diurnal variation of flow rates and least side-effects from medication).
2. To use the minimum medication to maintain control or the best overall results.
3. To treat exacerbations early to prevent them from becoming severe.

Physicians involved in the evaluation of impairment should assess whether the objectives of treatment of asthma have been achieved. They should therefore be familiar with the recent published guidelines for treatment of asthma by the National Asthma Expert Panel in the United States (4). In addition to the American Expert Panel's guidelines, other countries such as the United Kingdom (13), Australia (14), New Zealand (14), and Canada (15) have their own published guidelines. Effective management of asthma depends on both pharmacologic and nonpharmacologic measures. Nonpharmacologic measures include environmental control, patient and family education, and regular supervision. In some subjects it may take several months to achieve the objectives of treatment.

If the objectives of treatment are not achieved, the following could be done:

1. Give rating for temporary impairment (see tables 1 through 4).
2. Recommend specific treatment, or give referral to a specialist experienced in the management of asthma (e.g., pulmonary physician or allergist).
3. State when to reevaluate (when the objectives of treatment have been achieved or in 6 months, whichever is shorter).

RE-EVALUATION

Because asthma may improve or worsen with time, it is necessary to re-evaluate the subject if the clinical status changes even after long-term impairment/disability evaluation has been completed.

PARAMETERS TO BE CONSIDERED FOR RATING OF IMPAIRMENT

Tables 1 through 4 include the parameters used for classifying the extent of impairment. This is done based on both physiologic and clinical parameters.

TABLE 1

POSTBRONCHODILATOR FEV_1

Score	FEV_1 % predicted
	> lower limit of normal
	70–lower limit of normal
2	60–69
3	50–59
4	< 50

TABLE 2

REVERSIBILITY OF FEV_1 OR DEGREE OF AIRWAY HYPERRESPONSIVENESS*

Score	% FEV_1 change	or	PC_{20} mg/ml or equivalent
0	< 10		> 8
1	10–19		8– > 0.5
2	20–29		0.5– > 0.125
3	⩾ 30		⩽ 0.125
4	—		—

* When FEV_1 is above the lower limit of normal, PC_{20} should be determined and used for rating of impairment; when FEV_1 is < 70% predicted, the degree of reversibility should be used; when FEV_1 is between 70% predicted and the lower limit of normal either reversibility or PC_{20} can be used.

Reversibility with bronchodilator is calculated as,

$$\frac{FEV_1 \text{ post-bronchodilator} - FEV_1 \text{ pre-bronchodilator}}{FEV_1 \text{ pre-bronchodilator}} \times 100\%$$

Airway responsiveness is expressed as that concentration of agent that will provoke a fall in FEV_1 of 20% from the lowest post saline value. Plot the concentration of methacholine/histamine against the fall in FEV_1 using a logarithm scale for the doubling concentrations. The PC_{20} is obtained by interpolation between the last two points. The formula for linear interpolation of the PC_{20} from the log dose response curve is as follows:

$$PC_{20} = \text{antilog } C1 + \frac{(\log C2 - \log C1)(20 - R1)}{(R2 - R1)}$$

Where C1 = second last concentration (< 20% FEV_1 fall)
C2 = last concentration (> 20% FEV_1 fall)
R1 = % fall FEV_1 after C1
R2 = % fall FEV_1 after C2

Physiologic Parameters

The level of airflow limitation and either its reversibility or the level of airway responsiveness should be used in the impairment rating as shown in tables 1 through 4.

The postbronchodilator FEV_1 should be used in determining the level of airflow limitation. When there is no evidence of airflow limitation as defined above, the score is zero; when there is a severe degree of airflow limitation (FEV_1 < 50% predicted), the score is 4.

Whether the reversibility of airflow limitation or the degree of airway hyperresponsiveness should be used in impairment rating is dependent on the prebronchodilator FEV_1. When the prebronchodilator FEV_1 is above the lower limit of normal, the degree of airway hyperresponsiveness should be used; when the prebronchodilator FEV_1 is between 70% predicted and the lower limit of normal, either the degree of airway hyperresponsiveness or the degree of reversibility can be used; when the prebronchodilator FEV_1 is < 70% predicted, the degree of reversibility should be used.

TABLE 3

MINIMUM MEDICATION NEED*

Score	Medication
0	No medication
1	Occasional bronchodilator, not daily and/or occasional cromolyn, not daily
2	Daily bronchodilator and/or daily cromolyn and/or daily low-dose inhaled steriod (< 800 μg beclomethasone or equivalent)
3	Bronchodilator on demand and daily high-dose inhaled steriod (> 800 μg beclomethasone or equivalent) or occasional course (1–3/yr) systemic steroid
4	Bronchodilator on demand and daily high-dose inhaled steriod (> 1000 μg beclomethasone or equivalent) and daily systemic steroid

* The need for minimum medication should be demonstrated by the treating physician, e.g., previous records of exacerbation when medications have been reduced.

TABLE 4

SUMMARY IMPAIRMENT RATING CLASSES*

Impairment Class	Total Score
0	0
I	1–3
II	4–6
III	7–9
IV	10–11
V	Asthma not controlled despite maximal treatment; i.e. FEV_1 remaining < 50% despite use of ≥ 20 mg prednisone/day.

* The impairment rating is calculated as the sum of the patient's scores from tables 1, 2, and 3.

The degree of reversibility and airway hyperresponsiveness are given less weight compared with the other parameters, with a maximum score of 3.

Clinical Parameters

Although symptoms are a critical component of asthma because of their subjective nature, they should not be the only criterion for impairment rating. The frequency of acute exacerbations requiring emergency room treatment or hospitalization has been used in previous attempts to rate impairment (2). Given the efficacy of currently recommended antiinflammatory preparations in the treatment of asthma, frequent emergency room visits or hospitalizations generally reflect inadequate treatment and failure to achieve the objectives of treatment. The nature and frequency of medications required to maintain asthma under control (or the best results) give a better reflection of the severity of the disease and are more useful for the purpose of impairment assessment. The use of medication requirement as an important component in the rating scheme will be enhanced if the treating physicians follow published treatment guidelines (12–15).

The minimum medication required to maintain control of asthma (or the best results) can be used to rate severity (16), as indicated in table 3. A subject requiring occasional use (not daily) of bronchodilator (inhaled β-adrenergic agonist or oral theophylline) and/or cromolyn can be considered to have very mild asthma (or a severity score of 1). The need for inhaled β-adrenergic agonist or oral theophylline on a daily basis and additional daily low-dose inhaled steroid or cromolyn reflects an increase in severity of asthma. The need for daily high-dose inhaled steroid (> 800 mcg of beclomethasone or equivalent doses of other agents) and systemic steroid is given the highest severity score of 4. It is important that the rating physician be confident that these medications are the minimum required to maintain control (or the best results) in a subject and that reduction in medications leads to exacerbation of symptoms and reduced lung function.

IMPAIRMENT RATING

Impairment rating can be determined using the scheme shown in tables 1 through 4. This rating scheme attempts to standardize a method to quantify the effect of the illness on the subject's life, similar to earlier ATS guidelines on evaluation of impairment/disability (1, 2), rather than to quantify the severity of the disease itself. For the description of the clinical disease severity per se, the clinical severity scale of the National Asthma Expert Panel (4) should be used. The degree of impairment is calculated as the sum of the scores for postbronchodilator FEV_1, reversibility of FEV_1 or PC_{20}, and medication need. The class of impairment is expressed as Class 0, I, II, III, IV or V. Total impairment/disability (Class V) in a subject with asthma is defined as asthma that cannot be controlled adequately; despite maximal treatment, including ≥ 20 mg oral prednisone per day, the FEV_1 remains below 50% of predicted.

The evaluating physician may also express an opinion as to whether the impairment rating obtained overestimates or underestimates impairment due to unusual circumstances of individual subjects. These circumstances should be described in detail. Individual modifying factors, such as barriers to compliance in treatment, limitations to environmental control measures, and coexisting disease that might influence the impact of asthma on the subject's life should be clearly stated. In addition, the evaluating physician should indicate the effects asthma has on the subject's quality of life, including the impact on the subject's ability to perform his or her normal job.

SPECIAL CONSIDERATIONS FOR SUBJECTS WITH OCCUPATIONAL ASTHMA

General Comments

Occupational asthma is a disease characterized by variable airflow limitation and/or airway hyperresponsiveness due to causes or conditions that are attributable to a particular occupational environment and not to stimuli encountered outside the workplace. Occupational asthma may encompass both immunologic and nonimmunologic causes: (1) immunologic occupational asthma occurs upon reexposure to an agent after a latent period of immune sensitization; (2) nonimmunologic occupational asthma that does not induce immune sensitization as determined by currently available technology. An irritant and potentially toxic agent may trigger new asthma as an aftermath of an acute inhalation injury in some patients. Such individuals have nonspecific airway hyperresponsiveness and should be evaluated for impairment as for other general forms of asthma.

There are many follow-up studies of subjects with documented occupational asthma showing that the majority (60 to 90%) of subjects failed to recover several years after leaving exposure (17). Early diagnosis and cessation of exposure are documented prognostic factors that increase the likelihood of a favorable outcome (17). It has been shown that continuous exposure to the offending agent leads to deterioration of symptoms and even fatalities (17). It is therefore important to diagnose occupational asthma early and for the worker to avoid further exposure to the offending agent.

General Approach

Assessment of individuals with occupational asthma should be done by physicians with expertise in this area. Assessment for impairment/disability should take place at least on two occasions.

1. Temporary impairment/disability. Once the diagnosis of occupational asthma is made, the proper treatment is to remove the worker from exposure. These patients should be considered 100% impaired on a permanent basis for the job that caused the illness and for other jobs with exposure to the same causative agent. Because the individual cannot return to the previous job, plans for vocational rehabilitation should be instituted as soon as the diagnosis of occupational asthma is made. It is not necessary to wait for a permanent disability rating to initiate vocational planning. Several alternatives should be considered in the management of subjects with occupational asthma:

- Relocation to a new job either in the same plant or in a different plant where there is no exposure.
- Rehabilitation into a new job or early retirement. Financial compensation should be offered in every instance in which there

is loss of earnings. The amount and duration of compensation should be made known to the worker so that the worker can make rational decisions about the changes.

In some special situations, modification of the job such as improved ventilation, process change, or product substitution may enable the worker to remain. It is important to remember that when the agent acts by sensitization, the worker may react to levels of exposure well below those considered safe for individuals without prior sensitization. The ability of a respirator to provide adequate protection against the low levels that might trigger an attack and the ability of the asthmatic individual to work safely and effectively with the respirator must be carefully assessed before relying on these devices.

2. *Long-term impairment/disability.* Assessment for long-term impairment/disability should be carried out 2 yr after the removal from exposure when improvement has been shown to plateau (18). Evaluation should be done after the above objectives of treatment have been achieved and using the scaling system as for subjects with nonoccupational asthma.

List of participants: This statement was prepared by the ATS Ad Hoc Committee on Impairment/Disability Evaluation in Subjects with Asthma. The members of the Committee are as follows: Moira Chan-Yeung, M.B., (Chair); Philip Harber, M.D., (Co-Chair); William Bailey, M.D.; John Balmes, M.D.; Scott Barnhart, M.D.; Frederick E. Hargreave, M.D.; Jean-Luc Malo, M.D.; Charles Reed, M.D.; and Hal Richerson, M.D.

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Cardiovascular System Impairment Ratings

AMA Guides, 3rd Edition, revised - Chapter 6 (p. 127)

Objectives:

1) Determine the assessment requirements for performing cardiovascular impairment ratings and identify the four classes for impairment rating.
2) Identify the steps necessary for performing cardiovascular impairment ratings.
3) Determine the whole person cardiovascular rating using a case example.

Summary/Steps for Determining Cardiovascular Impairment Ratings

1. Determine the primary cardiovascular diagnostic category with review of confirmatory testing.
2. Review the patient's current treatment management.
3. Determine the functional ability using patient history and functional testing as necessary.
4. Determine the cardiovascular disease category utilizing the appropriate tables in Chapter 6 of the *AMA Guides* to calculate the impairment.
    - If more than one cardiovascular disease category is present, be sure to avoid double dipping regarding physical limitations. If more than one category is separately affecting the patient's functional limitations, **combine** the impairment ratings by using the Combined Values Chart (*AMA Guides* p. 254.).

References/Links

No worksheets needed, provide details of impairment rating in the narrative report.

Core Content The assessment of cardiovascular disease impairment incorporates a combination of:

- Diagnosis and confirmatory diagnostic testing (auscultation, electrocardiogram, exercise testing, echocardiography, cardiac catheterization and radioisotope studies)
- Treatment required
- Assessing symptomatic limitation

Impairment rating is based on the functional classifications including ADLs and heavy physical activity, which are found in *AMA Guides* Table 1, p. 128.

Cardiovascular Impairment General Principles

Diagnostic Categories of Cardiovascular Disease

The following table lists the categories of cardiovascular disease and where to find impairment rating information in the *AMA Guides*:

Cardiac Disease	**Table in *AMA Guides***	**Page number in *AMA Guides***
Valvular Heart Disease	5	133
Coronary Heart Disease	7	137
Congenital Heart Disease	8	141
Hypertensive Cardiovascular Disease	9	145
Cardiomyopathies	10	148
Pericardial Heart Disease	11	149
Arrhythmias	12	152
Vascular Disease of Extremities* (upper)	16	47
Vascular Disease of Extremities* (lower)	52	79

*These tables and page numbers are correct. There is an error in the text of Chapter 6.

Some diagnoses, such as cardiomyopathies and pericardial heart disease, can be reversible, therefore, allow an adequate period of time before assessing impairment.

Level of Treatment

Chronic treatment, drug therapy, diet control, and other treatment regimes are determining factors for classification and should be described. If surgery is appropriate for the diagnosis, this will be included in the classification description.
An impairment rating cannot be determined until all treatment regimes (drug or surgery) have received adequate trials.

Symptomatic Limitations

Impairment is partially assessed through the patient's report of symptomatic limitations with activities of daily living (ADLs) and heavy exertion. All of the cardiac diagnostic rating subsections are divided into four similar impairment classes. The general activity and class ranking for most subsections are below.

Class	% Whole Person Impairment	Description
1	0-10%	Asymptomatic during normal activities or with moderately heavy physical activities.
2	15-25%	Asymptomatic during normal activities, but some limitation in heavy physical exertion
3	30-50%	Symptomatic during normal activities
4	55-100%	Normal activities are significantly limited and at rest, symptoms may occur.

Exercise Testing

Exercise testing is the preferred method for quantifying limitations due to cardiovascular disease. In certain cardiovascular diseases, other forms of quantitative assessment will be used in lieu of, or in addition to exercise testing (i.e. angioplasty in the assessment of coronary artery disease).

Most exercise protocols use a treadmill for testing, but bicycle ergometry or the step test is acceptable. Ideally, measuring oxygen consumption gives the most accurate information about the patient's exercise capability. The physician should estimate the patient's cooperativeness and ability to exercise as well.

Steps for Exercise Testing

- Estimate the workload in multiples of resting metabolic energy (MET). One MET equals 3.5 ml/(kg●min).
    - For *treadmill* protocols use *AMA Guides* Table 2, p. 129 for the relationship of METS and functional class.
    - For *step test* protocols use *AMA Guides* Table 3, p. 130 for the relationship of METS and functional class.
    - For *bicycle ergometry* use *AMA Guides* Table 4, p. 130 for the energy expenditure in METS.

Tests such as echocardiography, angiography and radioisotope studies should not be ordered only for the purposes of rating impairment, but can contribute to the impairment rating when they are performed for clinical diagnosis and management. Expensive and invasive cardiovascular testing for the purpose of estimating impairment should not be performed.

Case Example: 59 y.o. male had myocardial infarction (MI) 6 months ago and was treated with 2 stents.
Examination findings:

- Continued fatigue and dyspnea on exertion with walking
- Abnormal stress test: increased ST V1-4
- Treated with low-fat diet, beta blockers, and statins
- Develops intermittent ventricular tachycardia
- Requires amiodarone for rate control

He has been restricted from any heavy labor job based on his stress test.

Calculate the impairment rating for this patient.

Answer:
Since the patient has symptoms of coronary heart disease (CHD), *AMA Guides* Table 7*,* p. 137 is used to determine the class and percentage of impairment. Due to the documented history of MI, EKG changes with exercise requires moderate dietary changes and medications, has recovered from surgery but still needs treatment, **Class 3**: 35-50% whole person impairment is evident. In this case, **40%** impairment is chosen.

Since the patient has documented cardiac arrhythmias, requires medications, but does not limit activity, an impairment of cardiac arrhythmias is calculated. Using *AMA Guides* Table 12, p. 152, **Class 2**: 15-25% whole person impairment is evident.
In this case, **15%** impairment is chosen as most of his physical limitation is due to his primary diagnosis.

Since two diagnoses categories are involved, the lower end of both categories is chosen and then combined for the final impairment rating.

For the overall impairment rating, use the Combined Values Chart (*AMA Guides* p. 254) to combine 40% (CHD) and 15% (cardiac arrhythmias) = **49%** whole person impairment rating.

Vascular Disease Affecting the Extremities - vascular impairment of the extremities may be assessed, however, the tables are located in different chapters. Please refer to *AMA Guides* Table 16 (p. 47) for upper extremity and *AMA Guides* Table 52 (p. 79) for lower extremity.
Impairment of the peripheral vascular system can result from:

- Diseases of arteries reducing blood flow and producing claudication, trophic changes, ulceration, gangrene, Raynaud's phenomenon, or even loss of an extremity;
- Diseases or veins producing pain, edema, stasis dermatitis, ulceration; and
- Disorders of lymphatics, leading to lymphedema, sometimes complicated by infection.

Pitfalls
Many patients with cardiac disease fall into more than one diagnosis category. The primary diagnosis should be the main focus when determining an impairment. If it is necessary to use more than one category to describe the patient's impairment, be careful that you have assigned the appropriate impairment percentage to each category. The same physical impairment should not be rated under two categories, as this would be "double dipping."

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Skin Impairment Ratings

AMA Guides, 3rd Edition, revised - Chapter 13 (p. 223)

Objectives:

1) Define the steps used to determine an impairment rating for skin diseases (including burns) and facial disfigurement.
2) Define the five (5) classes of skin impairment and identify the key elements of each class.
3) Calculate skin impairment ratings using case examples.

Summary/Steps for Determining Skin Impairment Ratings

1. Evaluate the patient with a detailed medical history and complete physical examination, including diagnostic testing to determine the signs and symptoms of the skin disorder, the type of treatment (intermittent or continuous) and the limitations in ADLs.
2. Determine impairment by utilizing *AMA Guides* Table 1, (p. 232) to identify the proper class and impairment rating *recognizing that the most important information for determining the numerical rating is the interference with ADLs*.

References/Links: No worksheet needed, please provide details of impairment rating in the narrative report.

Core Content

Criteria for evaluating the effect of skin permanent impairment depends upon the individual's ability to perform or participate in ADLs. Permanent impairment of the skin is defined as a skin condition that persists following maximum medical treatment, rehabilitation, and after a length of time sufficient to permit regeneration or other physiologic adjustments. This includes any functional or anatomic abnormality or loss including an acquired immunologic capacity to react to antigens (such as allergic contact dermatitis, which is the most common work-related skin impairment).

Skin Impairment General Principles

A medical evaluation involving a detailed medical history, complete physical examination, and diagnostic testing should be performed for all impairment ratings. The amount of *functional loss* is most important when determining impairment. Other factors to consider for the skin include:

- Extent of surface involved
- Site involvement (hands and feet are very important to assess)
- Altered cosmetic appearance
    - Pus
    - Smell
    - Scale
    - Disfigurement

- Need and frequency of treatment
- Effect of medical diagnosis on life activities
- Accommodations and/or restrictions

Classes of Skin Impairment **INCLUDING BURNS** (except for isolated facial burns)
Once the examination is complete, utilize Table 1 (p. 232) of the *AMA Guides* to determine the class of impairment and the associated impairment rating. Table 1 outlines Classes 1-5 for Skin Impairment:

Class 1 (0-5%)	**Class 2 (10-20%)**	**Class 3 (25-50%)**	**Class 4 (55-80%)**	**Class 5 (85-95%)**
Signs or symptoms of skin disorder are present **and** with treatment, there is no limitation, or minimal limitation, in the performance of ADLs, although exposure to certain physical or chemical agents might increase limitation temporarily	Signs and symptoms of skin disorder are present **and** intermittent treatment is required **and** there is limitation in the performance of some of the ADLs	Signs and symptoms of skin disorder are present **and** continuous treatment is required **and** there is limitation in the performance of many ADLs	Signs and symptoms of skin disorder are present **and** continuous treatment is required which may include periodic confinement at home or other domicile **and** there is limitation in the performance of many ADLs	Signs and symptoms of skin disorder are present **and** continuous treatment is required, which necessitates confinement at home or other domicile **and** there is severe limitation in the performance of ADLs

Three elements are used to define the five (5) classes of skin impairment:
1) The presence of signs and symptoms of a skin disorder MUST be present,
2) Intermittent or continuous treatment, and
3) Assessment of the limitations in performance of ADLs.

Skin Impairments in Class 1 or Class 2 may be intermittent and may not be present at the time of the examination.

Burns are typically rated under both the appropriate class of skin impairment and range of motion loss if applicable. Once taken to whole person, these ratings are **combined**.

Facial Scars and Disfigurement

Facial abnormalities are rated under Chapter 9: Ear, Nose, Throat and Related Structures of the *AMA Guides* (p. 179).

1. Class 1 -- Impairment of the Whole Person, 0-5%: A patient belongs in Class 1 when the facial abnormality is limited to a disorder of the cutaneous structures, such as visible scars and abnormal pigmentation.
2. Class 2 -- Impairment of the Whole Person, 5-10%: A patient belongs in Class 2 when there is loss of supporting structure of part of the face, with or without cutaneous disorder. Depressed cheek, nasal, or frontal bones constitute a Class 2 impairment.
3. Class 3 -- Impairment of the Whole Person, 10-15%: A patient belongs in Class 3 when there is an absence of a normal anatomical area of the face. Loss of an eye or loss of part of the nose with the resulting cosmetic deformity, constitute a Class 3 impairment.
4. Class 4 -- Impairment of the Whole Person, 15-35%: A patient belongs in Class 4 when facial disfigurement is so severe that it precludes social acceptance. Massive distortion of normal facial anatomy constitutes a Class 4 impairment.

If there is no neurologic, psychiatric, or range of motion loss, then the most appropriate rating would likely be Class 1, not exceeding 5% whole person.

For further guidance, helpful guidelines immediately follow the class descriptions on p. 179, including the following unnumbered table.

Disfigurement	% Impairment of the Whole Person
Unilateral Total Facial Paralysis	5
Bilateral Total Facial Paralysis	8
Loss or Deformity of Outer Ear	2
Loss of the Entire Nose	25
Nasal Distortions in Physical Appearance	5

On the basis of the above guidelines, reasonable impairment values can be placed on other facial disfigurements.

******TIP: Referencing this section can help inform the rating of other scars or skin disorders.******

Other Systems to Consider

Skin impairment can be associated with other body system impairments requiring a separate rating which may include:

- Related psychological or behavioral changes
    - Mental Impairment Worksheet (WC-M3-Psych)
- Sensory alterations
    - Nervous system impairment (Chapter 4)
- Range of motion defect
    - Musculoskeletal impairment (Chapter 3)
- Limited chest wall excursion
    - Respiration impairment (ENT section, Table 5, p. 181)

Each system should be evaluated independently for the degree of impairment and then **combined** using the Combined Values Chart, *AMA Guides*, p. 254 for total whole person impairment.

Disfigurement Award

Not all scars or disfigurement will qualify for an impairment rating. In order to qualify for impairment rating the individual's ADLs must be affected. An injured worker with a disfigurement can apply for a "disfigurement award," but this does not affect the impairment rating process.

Workshop Cases

Workshop Case #1

A 27-year-old worker was employed in a small plant making latex gloves for the past 5 years. His job was to mix and pour batches of gloves. He developed an acute contact dermatitis of the hands, arms, neck, with small patches on the face. Patch testing for a type IV contact dermatitis was positive to 2-n-4-isothiazolin-3-one, a rubber accelerator used to polymerize the latex in the gloves.

Diagnosis: allergic contact dermatitis due to rubber accelerator present in latex gloves.

He was restricted from direct and indirect exposure to mixing batches of gloves, however, dermatitis persisted on his face. When he quit his job, his dermatitis resolved completely but he had to avoid using latex gloves because of his contact allergy to the rubber accelerator.

How would you rate this patient?

Answer: Using *AMA Guides*, Table 1 (p. 232):
Class 1 impairment (0-5% whole person rating)

- Signs and symptoms are present, **and**
- With treatment, there are **no or minimal** limitations in performance of activities of daily living.
- Exposure to certain agents or chemicals might temporarily increase limitations.
- Examples: allergic contact dermatitis, photodermatitis, occupational leukoderma without behavioral effects.
- No neurologic, psychiatric or facial involvement exists, and there is no loss of range of motion.

Workshop Case #2

A 17-year-old man worked in a rare metals refining plant. One day he was inadvertently splashed with liquid zirconium chloride over the face, neck, and hands. He immediately washed the areas but required admission to the hospital for 2 days of treatment. He was able to return to work 22 days later.
One year later, examination of the face shows well-demarcated areas of depigmentation, with narrow collars of hyperpigmentation around the depigmented areas. The hands and arms have irregular areas of depigmentation as well.

Diagnosis: chemical leukoderma after zirconium chloride burn.

The areas are hypersensitive to cold, heat, pinprick, and touch. They sunburn easily which occasionally requires treatment. They sting and burn when the patient works near a furnace or kiln. He is embarrassed about his appearance and avoids many social activities.

How would you rate this patient?

Answer: Using *AMA Guides*, Table 1 (p. 232):
Class II Impairment (10 – 20% whole person rating)

- Signs and symptoms of a skin disorder are present, **and**
- Intermittent treatment is required, **and**
- Limitation in performance of **some** activities of daily living..
- Examples:
    - Atopic dermatitis - Contact dermatitis
    - Persistent photodermatitis aggravated by UV light
    - Leukoderma after chemical burn (zirconium chloride)
- This patient may also be a candidate for supportive psychological therapy which may or may not include a mental impairment rating.

Workshop Case #3

A 45-year-old man has a persistent pruritic skin rash involving his ankles, forearms, hands, face, and neck. These areas are excoriated and lichenified. He has recurrent pyogenic infections with swollen and tender regional lymph nodes.
The patient previously worked in a greenhouse. Activities included planting, weeding, watering, fertilizing, and spraying with pesticides and fungicides. These chemicals were primary irritants, and the patient's dermatitis responded to topical treatment and avoidance. However, his condition would flare with re-exposure to irritants.

A skin biopsy was performed to evaluate the rash:

- Epidermal thickening (acanthosis) and hyperplasia
- Hyperkeratosis/ parakeratosis
- Slight thickening of the papillary dermis with coarse collagen fibers and a lymphoid inflammatory cell infiltrate.

Eventually, the condition persisted, and the pruritus flared with nonspecific triggers such as heat, sweating, and stress. The patient has developed neurodermatitis – an "itch-scratch" syndrome also known as lichen simplex chronicus.

Diagnosis: persistent neurodermatitis secondary to occupational contact dermatitis.

He has not worked in a plant nursery for the past 3 years and does not tolerate other physical work since his dermatitis flares. At home, he cannot help with household chores, and no longer participates in social and recreational activities. He requires almost continuous treatment due to flare-ups.

How would you rate this patient?

Answer: Using *AMA Guides*, Table 1 (p. 232):
Class 3 Impairment (25-50% whole person rating)

- Signs and symptoms of a skin disorder are present, **and**
- Continuous treatment is required, **and**
- There is limitation in the performance of **many** activities of daily living.
- Example: Occupational irritant or allergic dermatitis with secondary neurodermatitis
- Patient may also be a candidate for supportive psychological therapy which may or may not include a mental impairment rating.

DIVISION OF WORKERS' COMPENSATION
MEDICAL PROGRAMS / CONTACT INFORMATION

Division Website: www.colorado.gov/cdle/dwc

All Division Rules of Procedure, official Division forms, Division Interpretive Bulletins, and the Workers' Compensation Act are available from the website. Some examples:

- Form WC164 – Physician's Report of Workers' Compensation Injury
- Form WC-M3 - Psych Rev. 1/06 – Mental Impairment Rating form
- Form WC181 – Medical Billing Dispute Resolution Intake Form
- Form WC188 – Authorized Treatment Physician Request for Prior Authorization
- Form WC36A & B – Advisement for Claimant re: Audio-Recording of IME (English/Spanish)
- DK10 – Apportionment of Spinal Range of Motion
- DK11 – Impairment Rating Tips
- DK14 – Apportionment Calculation Worksheet
- DK15 – Guidance/form letter/flow chart to be followed when discharging a patient for non-medical reasons.

Available *Interpretive Bulletins* address topics in IME, Medical Utilization Review, medical records release and privacy, and the use of nurse-practitioners and physician assistants.

General Customer Service	(303) 318-8700 (888) 390-7936	workers.comp@*state.co.us*
Provider Education	(303) 318-8754	*cdle_dowc_provider_education@state.co.us*
Impairment Rating Questions	(303) 318-8752 (303) 318-8756	*david.indovina@state.co.us* *courtney.holmes@state.co.us*
Independent Medical Exams	(303) 318-8655	*IMEUnit@state.co.us*
Fee Schedule and Utilization Standards	(303) 318-8667	*grace.kohl@state.co.us*
Medical Billing Dispute Resolution	(303) 318-8765	*cdle_medicalpolicy@state.co.us*
Medical Treatment Guidelines	(303) 318-8760	*roy.foster@state.co.us*
Utilization Review Program	(303) 318-8767	*Iliana.gallegos@state.co.us*

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DIME

Division Independent Medical Examination

What is the Division of Workers' Compensation Independent Medical Examinations (DIME) Program?

If there is a dispute concerning Maximum Medical Improvement (MMI) or impairment rating and the parties cannot agree upon a Level II Accredited physician to complete the DIME, the Division will select from a panel of DIME physicians. This is based on an application by the party who objects to the impairment rating and/or statement on MMI from the authorized treating physician.

A party to the claim must obtain a DIME if they wish to dispute the treating doctor's conclusions at hearing. The DIME's opinion can only be overcome by clear and convincing evidence before an administrative law judge, and the parties may not go to hearing until the DIME physician has issued a completed report.

If the parties are unable to agree on an independent medical examiner, the Division will provide a list of three Level II accredited physicians from the DIME Panel from which the parties select a physician. The process is guided by the Colorado Workers' Compensation Act and Workers' Compensation Rules of Procedure (Rule 11).

The Division reviews DIME physicians' reports to assure that they are complete and adhere to the basic principles taught in the Level II accreditation curriculum and the AMA Guides, 3rd Ed. (rev.).
The fee to obtain a DIME as outlined in Rule 11 is paid directly to the physician.

Contact us today to begin your application process!

COLORADO
Department of Labor and Employment
Division of Workers' Compensation

Physician Education and Support (PES)

- The Division offers a service to all DIME Panel members to make the DIME process easier for the physicians and their staff.
- DIME physicians have a personal PES representative who will provide a smooth transition into the DIME Panel. Your PES representative will assist you and your staff to answer any administrative questions about DIME cases.
- The program also offers a Medical Reviewer to assist with any medical or impairment related questions.

Contact Information

Phone: 303-318-8655

Fax: 303-318-8659

633 17th Street Suite 400

Denver, CO 80202

imeunit@state.co.us

www.colorado.gov/cdle/dwc

Why Become a DIME Physician?

- Provide a valuable service to the citizens of Colorado by protecting the integrity of our workers' compensation system
- Reduce litigation costs for employers and injured workers
- Elevate your status as a respected expert in the workers' compensation community
- Review a case from start to finish
- DIME physicians get prepaid before the appointment gets made
- Potential for new business!

Requirements to Become a DIME Physician:

- Current, active, and unrestricted license by the appropriate Colorado licensing board
- Certified/board eligible in an area of specialty
- Perform 384 hours of direct patient care per year or perform at least 384 hours of direct patient care during the previous five years and demonstrate additional competency in disability evaluation through certification or equivalent continuing medical education courses
- Level II Accredited

If all of these apply, then call today to join!

DIME Examination Fees:

(Based on the date of injury to the filing of the DIME application and/or the number of body regions)

Two years or less **and/or** less than three body regions	Over two years but less than five **and/or** three or four body regions	Over five years **and/or** five or more body regions
$1,000	**$1,400**	**$2,000**

CONTACT THE DIVISION OF WORKERS' COMPENSATION INDEPENDENT MEDICAL EXAMINATION UNIT FOR MORE INFORMATION:

imeunit@state.co.us • 303-318-8655