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Upper Extremities Impairment Evaluation Appendix

Rating Impairment In California – AMA Guides 5th Edition

- **LC § 4660 (b)(1):** After 01-01-2005, The 5th Edition of the AMA Guides defines the standard methods the evaluator must follow to measure the objective manifestations of impairment when considering both anatomic and functional loss. Evaluating Physician reports the whole person impairment (WPI) rating for any impairment using the AMA Guides, 5th Edition, and explains how the rating was derived. List tables used and page numbers.
    - **AMA Guides 5th Edition Section 2.6b, pg. 22:**
      "[Evaluating Physician must] compare the medical findings with the impairment criteria listed within the Guides and calculate the appropriate impairment rating. Discuss how specific findings relate to and compare with the criteria described in the applicable Guides Chapter."
    - **AMA Guides 5th Edition Section 2.6c, pg. 22:**
      "[Evaluating physician] includes an explanation of each impairment value with reference to the applicable criteria of the Guides."

Upper Extremities – Chapter 16

AMA 5th Edition – Chapter 16, pg. 433 & Section 16.1, pg 434:
"This Chapter provides criteria for evaluating permanent impairment due to anatomic impairments of the hand and upper extremity. ***The physical evaluation determines the anatomic impairment and is based on the history and detailed examination of the individual and upper extremity. ...Evaluation of anatomic impairment forms the basis of upper extremity assessment. [ ]...the necessary level of standardization in precision and reproducibility to assess function has not yet been developed to derive a numeric impairment rating. Therefore, evaluation of anatomic impairment forms the basis for upper extremity assessment."***

1. Impairment is based on examiner's actual findings. (AMA pg. 435)
2. Complete and detailed examination of the upper extremities is necessary.
3. Impairment evaluation must address abnormal ROM, Ankylosis, Amputation, Peripheral, Vascular Nerve System and other disorders. (AMA pg. 435)
4. **ROM assessment requires that both extremities be compared and individual joints be evaluated separately. Active Motion measurements take precedent** (AMA pg. 451).
5. **When ROM of the contralateral normal is less than 'average mobility' adjust accordingly** (Guides 5th pg. 453, Example 16-16).
6. Peripheral Nerve Abnormalities are based on the anatomic distribution and severity of loss of functions resulting from (1) sensory deficits or pain and (2) motor deficits and loss of power (AMA pg. 481**). Without CRPS, abnormal ROM values are not added to peripheral nerve lesion impairments.**

7. Entrapment/compression neuropathies are rated when an objective verifiable diagnosis is present, supported by positive clinical findings and loss of function. Documentation requires Nerve Conduction Studies & EMG studies (AMA pg. 493). **Additional impairment values are not given for decreased grip strength** (AMA pg. 494).

8. Vascular disorders are only considered when objective testing establishes the presence of obstructive physiology (AMA pg. 497).

9. Bone & Joint Disorders, resection or implant arthroplasty, musculo-tendinous disorders and loss of strength are used when the impairment criteria addressed in Sections 16.3 to 16.6, have not adequately encompassed the extent of the impairment (AMA pg. 499). **Evaluating physician must be aware of the overlapping pathomechanics inherent among these conditions and closely follow the impairment evaluation criteria to avoid doubling-up of impairment.**

10. Skin disorders, including disfigurement, scars and skin grafts, are evaluated using criteria in AMA Guides, Chapter 8.

Active ROM Abnormalities – Validation Procedures

Many different factors can limit the normal range of motion of the joints of the upper extremities. Limitation of active motion can be due to failure of the nerve, muscle, or tendon to execute the motion. Sound clinical knowledge and measurement techniques are necessary for appropriate impairment evaluation and rating.

If pain is present during range of motion testing, muscle guarding may also limit motion. This guarding should be palpable. Limitation of passive motion can be from involvement of the joint itself, a fixed contracture, or the antagonistic muscle or tendon that holds back the motion because it is adherent or too short.

Active range of motion is a more sensitive indicator of joint loss of motion, but is also more sensitive to symptom magnification and self inhibition by the patient. **If active motion differs significantly from passive range of motion, the examiner should note the difference and provide a pathological explanation (e.g., abduction weakness after a rotator cuff tear prevents full motion against gravity).**

As in prior editions of the *Guides,* the examiner is permitted to disallow the rating for loss of active range of motion if there is not patho-anatomic or physiological correlation, and there is suboptimal effort or symptom magnification. Sound clinical knowledge and measurement techniques are necessary for appropriate impairment evaluation and rating using range of motion deficits.

If the opposite extremity is neither involved nor previously injured, it must be used to define normal for that individual. *Any* losses should be made in comparison to the opposite normal extremity. - Guides 5th pg. 453, Example 16-16.

Joint range of motion measurements are rounded to the nearest whole number ending in 0. Thus, joint motion is not recorded as 32° or as 48°, but rather as 30° and 50°, respectively. Joint motion cannot be reliably measured to the level of single degrees.

Evaluating Abnormal Joint Motion - Guides 5th, Section 16.4, pg. 450

In assessing motion, the examiner should:

1. **Observe what an individual can and cannot do by asking him or her to move each joint of the extremity, from the shoulder down, through its full range of motion. *Both extremities should be compared.***
2. **Individual joints are then evaluated separately.**
3. **Similarly, movements of the digits are first evaluated as a unit by having the individual make a complete fist and then extend the digits fully over several repetitions.**
4. **In determining the range of motion of individual joints, the examiner must evaluate both the active and the passive motion.**

Evaluating Abnormal Finger Joint Motion – Guides 5th, pg. 451

Digital joints are measured with the wrist held in neutral position and the forearm pronated. To measure the ROM of individual joints, the proximal joint(s) are stabilized in extension, and only the joint being measured is flexed. Note that if all three joints are flexed simultaneously, as in making a fist, active flexion of the metacarpophalangeal joint will be decreased. In some cases of decreased finger motion due to limited excursion of the activating musculo-tendinous unit or blockage of motion by the antagonistic musculotendinous unit, the measurement of individual joints, as described earlier, can be normal • or near normal. In these situations, the *total active range of motion* (TAM) of the digit is measured. Flexion of each joint is measured while all three joints are held in a position of maximum active flexion, or the finger is flexed as a whole unit. Similarly, extension of each joint is measured while all three joints are held in maximum extension. The methods used to derive motion impairment of a digit using individual joint measurements and the total active range of motion of a digit are different, as explained on p. 465, Combining Abnormal Motion at More Than One Finger Joint. *The joint measurement technique that best reflects the existing impairment is selected.*

Definitions

Active or voluntary motion is movement that is performed by the active contraction of the governing muscles and is evaluated first when a person has full active joint motion (joint excursion or arc of motion), passive motion does not need to be assessed because a joint that has full active excursion will also have full passive range.

However, if the full active joint excursion is incomplete, assisted active and/or passive motion measurements are necessary to evaluate the joint motion. Measurements of active motion take precedence in the *Guides.* The actual measured goniometer readings or linear measurements are rounded to end in 0 and are then recorded.

Passive motion is that produced by an external force to determine the freedom and range of motion existing at a joint when all muscles are relaxed. An example is Bunnell's test for intrinsic tightness in the hand.

Assisted active motion is the result of active muscle contraction and an external force applied to the joint; it allows for stabilization of a segment to improve the mechanical advantage of the muscles that move the joint being measured. In both cases, approximately 0.5 kg of force is applied while a segment of the joint is stabilized. *Measurements of active motion take precedence in the Guides.* The actual measured goniometer readings or linear measurements are recorded.

Definitions (continued)

Joint motion may be uncomfortable but, when examined in this manner, neither active assisted nor passive range of motion measurements will cause injury to an individual. These techniques are part of traditional musculoskeletal physical examination.

Range of motion should be measured after a "warm up" in which the individual moves the joint through its maximum range of motion at least three times. The range of motion examination is then performed by recording the active measurements from 3 separate range of motion efforts. Measurements should be rounded up or down to the nearest number ending in 0 (e.g., 20° instead of 24° and 30° instead of 25°)

All measurements should fall within 10° of the mean of these three measurements. The maximum observed measurement is used to determine the range of motion impairment. The examiner should compare the observed findings with other findings documented since the individual has been at MMI, to further determine the reliability of the measurements. It is recognized that patients may under-demonstrate their capabilities.

Neutral Zero Reference System (Goniometric)

The Neutral Zero (system of goniometric reference) is used for all joint measurements, and is based on the premise of the neutral position of a joint being the zero position.

The "extended anatomic position" is accepted as 0° rather than 180° and the degrees of joint motion increase in the direction the joint moves from the zero starting point. The term *extension* describes motion opposite to flexion. Incomplete extension from a flexed position to the neutral starting point is defined as *extension lag.* Extension exceeding the zero starting position, as can be seen in normal MCP, elbow, and knee joints, is referred to as *hyperextension. Ankylosis* refers to complete absence of motion of a joint.

For ease of notation, a plus sign (+) is used to indicate joint hyperextension and a minus sign (-) to indicate extension lag. These signs have no mathematical significance. Using this notation system, a finger joint flexion contracture (limitation of passive extension) with an identical extension lag (limitation of active extension) of 10°, with active flexion to 40° would be recorded as -10° to 40°. A joint motion with 10° hyperextension and 40° flexion would be recorded as +10° to 40°.

The arc of motion represents the total number of degrees traced between the two extreme positions of movement in a specific plane of motion. For example, from maximum flexion to maximum extension of the PIP joint. When a joint has more than one plane of motion, each type of motion is referred to as a unit of motion. For example, the wrist has two units of motion flexion/extension (AP or sagittal plane) and ulnar/radial deviation (lateral or coronal plane). The *term functional position of a joint denotes* the optimal or least impairing angle or angles recommended for surgical joint fusion. When a joint has more than one unit of motion, each separate unit is assigned a functional position. For example, the functional position of the elbow is considered to be 80° flexion and 20° pronation.