Rating Boot Camp: Upper Extremities

Presented by: Barry Knight, DEU Manager and Annalisa Becker, DEU Supervisor

Basic Upper Extremity Impairment Rating Methods

- Range of motion
- Amputation
- Peripheral Nerve
- Muscle Strength testing
- Digit sensory loss
- Arthroplasty
- Joint instability
- CRPS
- Grip
What do the AMA Guides say?

- “In general, impairment ratings within the same region are combined before combining the regional impairment rating with that from another region.” (per page 10)

- The AMA Guides state that the regional impairments resulting from the hand, wrist, elbow and shoulder regions are added or combined to provide the upper extremity impairment. The upper extremity is then converted to whole person impairment by means of Table 16-3.

CVC is how disabilities are combined

Residual chart $A + B (1 - A)$

Compaction increases with larger numbers

Difficult to reach 100%
Rules of Combining

• Combine largest to smallest

• Round each combination to nearest whole number

• Use CVC (PDRS 8-2 thru 8-4)

• Example: Combine 38, 8 and 20

Combined Values Chart

38 C 20 = 50
50 C 8 = 54
When are Impairments Added

- ROM values within a single joint
- Impairment values of all thumb joint motions
- Hand impairment values contributed by each digit
- Muscle strength impairments within an upper extremity joint (Table 16-35)
- When there is thumb amputation proximal to MP joint

PDRS Rules of Combining

- Multiple impairments in a single part of an extremity are combined at UE index
- Impairments in the 16.01 series are adjusted to disability before being combined with other disabilities
- PD for an entire arm is calculated before being combined with other body parts
- The combined rating for an arm may not exceed amputation after adjustment
Digit Values vs. Hand

Digit Values

- Thumb 40%
- Index 20%
- Middle 20%
- Ring 10%
- Little 10%
- Hand 100%

Upper Extremity Values vs. WPI

Upper Extremity Values

- Hand 90% of Arm
  - .9 modifier
- Arm 60% of Body
  - .6 modifier
Problem #1

A 36 year old Butcher at ABC Meats slips and fractures left wrist.

Physician provides impairment rating based on decreased wrist motion and grip loss

Wrist = 10 WP

Grip = 12 WP
Factors of Impairment

- Wrist ROM
  - Dorsal 20 degrees
  - Palmar 30 degrees
  - Radial 10 degrees
  - Ulnar 10 degrees

- Grip measurements
  - Left 15/15/20
  - Right 30/30/35

Wrist ROM
Flexion and Extension

Figure 16-28, p. 467

20° Extension

30° Flexion
Wrist ROM Radial and Ulnar Deviation

Figure 16-31, p. 469

10° Radial Deviation

10° Ulnar Deviation

Wrist ROM Impairment

- Wrist ROM
- Dorsal 20 degrees = 7 UE
- Palmar 30 degrees = 5 UE
- Radial 10 degrees = 2 UE
- Ulnar 10 degrees = 4 UE
- Total = 18 UE x .6 = 11 WP

Left Wrist ROM
Grip Loss Impairment

- Injured Left 15/15/20 = 50/3 = 16.7
- Right 30/30/35 = 95/3 = 31.7
- Formula = (Normal – Injured)/ Normal
- 31.7 – 16.7 = 15/31.7 = 47.3% = 20 UE = 12 WP

Left Grip

Table 16-34 Grip Loss

<table>
<thead>
<tr>
<th>% Strength Loss</th>
<th>Upper Extremity Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-30</td>
<td>10</td>
</tr>
<tr>
<td>31-60</td>
<td>20</td>
</tr>
<tr>
<td>61-100</td>
<td>30</td>
</tr>
</tbody>
</table>
Physician Options

- Use opposite extremity as normal
- Use Tables 16-31 and 16-32 (population averages)
- Estimate normal

Hand Dominance

- Hand dominance is difficult to objectively measure and is not accounted for in these impairment ratings.
- Exceptions to the rule...
  - Chapter 16: Grip loss Tables 16-31, 16-32 are used if both extremities are involved to compare to the average normal strengths.
  - Chapter 13: Central and Peripheral Nervous System, Table 13-16 for lesions of the brain and Table 13-22 for CRPS.
Consultative Rating

L Wrist ROM S: 20-0-30 F: 10-0-10: 18 UE = 11 WP

L Grip Loss 47% = 20 UE = 12 WP

16 C 15 = 29 Final PD

Grip cannot be rated in the presence of decreased motion that prevents maximum application of force.

When Grip Cannot be Rated

Cannot be rated if maximum strength prevented by

- Decreased motion
- Pain
- Amputation

Cannot be rated for:

- Peripheral nerve injuries
- CRPS injuries
- Grip impairment for elbow and shoulder injuries
Key to Grip Impairment

- Ask physician
- Cause of strength loss
- Then ask if AMA Guides page 508 preclusions apply

Problem #1

What if the date of injury was in 2014?
- As a result of SB 863, LC 4660.1 removes the Future Earning Capacity adjustments [1-8] with the modifier of [1.4].

L Wrist ROM

L Grip Loss

18 C 16 = 31 Final PD
Problem #2

Occupation: Baseball Pitcher
Age: 22 years

Rotator cuff tear in right shoulder. Injured underwent rotator cuff repair with distal clavicle arthroplasty.

Physician rated the following impairments:

25% strength deficit for all units of shoulder motion except internal and external rotation which he gave a 10% strength deficit.

R Shoulder ROM
S: 20-0-120 F: 110-0-40 R: 50-0-30
Pain: 3 WP
Shoulder Motions

Flexion/Extension  Abduction  External/Internal Rotation

Table 16-35  Impairment of the Upper Extremity Due to Strength Deficit From Musculoskeletal Disorders Based on Manual Muscle Testing of Individual Units of Motion of the Shoulder and Elbow

<table>
<thead>
<tr>
<th>Joint</th>
<th>Unit of Motion</th>
<th>% Upper Extremity Impairment</th>
<th>Strength Deficit*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relative Value</td>
<td>5%-25%*</td>
<td>30%-50%*</td>
</tr>
<tr>
<td>Shoulder (60%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexion</td>
<td>24</td>
<td>1-6</td>
<td>7-12</td>
</tr>
<tr>
<td>Extension</td>
<td>6</td>
<td>0-2</td>
<td>2-3</td>
</tr>
<tr>
<td>Abduction</td>
<td>12</td>
<td>1-3</td>
<td>4-6</td>
</tr>
<tr>
<td>Adduction</td>
<td>6</td>
<td>0-2</td>
<td>2-3</td>
</tr>
<tr>
<td>Internal rotation</td>
<td>6</td>
<td>0-2</td>
<td>2-3</td>
</tr>
<tr>
<td>External rotation</td>
<td>6</td>
<td>0-2</td>
<td>2-3</td>
</tr>
<tr>
<td>Elbow (70%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexion</td>
<td>21</td>
<td>1-5</td>
<td>6-11</td>
</tr>
<tr>
<td>Extension</td>
<td>21</td>
<td>1-5</td>
<td>6-11</td>
</tr>
<tr>
<td>Pronation</td>
<td>14</td>
<td>1-4</td>
<td>4-7</td>
</tr>
<tr>
<td>Supination</td>
<td>14</td>
<td>1-4</td>
<td>4-7</td>
</tr>
</tbody>
</table>

* Use clinical judgment to select the appropriate percentage from the range of values shown for each severity grade.

1 Complete range of motion against gravity only without resistance.

2 Complete range of motion against gravity with some resistance.

Derived from Section 16-4 and Table 16-11 by G. de Greve Swanson, Grand Rapids, Michigan.
Problem #2

Calculating shoulder strength deficit

Flexion  Max value 24  x  25%  =  6 UE
Extension  Max value  6  x  25%  =  2 UE
Abduction  Max value 12  x  25%  =  3 UE
Adduction  Max value  6  x  25%  =  2 UE
Int Rotate  Max value  6  x  10%   =    1 UE
Ext Rotate Max value  6  x  10%   =    1 UE
Total                                                      15 UE

Shoulder ROM

Extension 20 degrees
Flexion  120 degrees
Shoulder ROM

Abduction 110 degrees
Adduction 40 degrees

Shoulder ROM

External Rotation 50 degrees
Internal Rotation 30 degrees
Problem #2
Calculating shoulder ROM deficit

Flexion = 4 UE
Extension = 2 UE
Abduction = 3 UE
Adduction = 0 UE
Int Rotate = 4 UE
Ext Rotate = 1 UE
Total = 14 UE

Distal Clavicle Arthroplasty

- Most common
- Resection
- 10 Upper Extremity Impairment per Table 16-27
An Arthroplasty by Any Other Name

Is Still 10 UE

- Distal clavicle arthroplasty
- Mumford procedure
- Distal clavicle resection
- Distal clavicle excision

Pursuant to Chapter 18 of the AMA Guides, a whole person impairment rating based on the body or organ rating system of the AMA Guides (Chapters 3 through 17) may be increased by 0% up to 3% WPI if the burden of the worker’s condition has been increased by pain-related impairment in excess of the pain component already incorporated in the WPI rating in Chapters 3-17. (AMA Guides, p. 573.)
Pain Add-on

- Maximum 3 WP
- AMA impairments account for common pain
- Must increase burden in excess of pain component already incorporated

DEU Approach to Pain

- 3 WP maximum for pain
- Add-on to ratable impairment only
- Will assign pain to body part if physician does not
### DEU Consultative Rating

**Shoulder ROM S: 20-0-120 F: 110-0-40 R: 50-0-30: 14 UE**

Shoulder muscle strength: 15 UE

Distal clavicle arthroplasty: 10 UE (corrected)

15 C 14 C 10 = 34 UE x .6 = 20 WP


3 WP add-on included for pain

---

### DEU Consultative Rating Annotations

- Strength impairment cannot be rated in the presence of decreased motion or pain that prevents maximum application of force.

- Strength cannot be combined with other impairments unless due to different etiologic or pathomechanical cause.

- Distal clavicle arthroplasty not included in physician impairments.
Muscle Strength Impairment

- Cannot be combined with other impairments unless due to different
  - Etiologic cause
  - Patho-mechanical cause

Problem #3

Secretary, 42 years old, undergoes carpal tunnel release.

Physician impairments:

Median nerve 25% sensory deficit
Median nerve 25% motor deficit
Calculating Peripheral Nerve Impairment

1. Find the nerve involved

2. Find maximum sensory and motor deficits
   (Table 16-15)

3. Doctor determines percentage of sensory and motor deficits

4. Multiply maximum sensory nerve value by percentage of deficit

5. Multiply maximum motor nerve value by percentage of deficit

6. Combine sensory and motor nerve impairment.

7. Convert to WP and adjust for disability
Identify Nerve
Find Maximum Deficits

Table 16-15 Maximum Upper Extremity Impairment Due to Unilateral Sensory or Motor Deficit Deficits of the Major Peripheral Nerves

<table>
<thead>
<tr>
<th>Nerve</th>
<th>Sensory Deficit or Pain *</th>
<th>Motor Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pectoral (medial and lateral)</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Axillary</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>Dorsal scapular</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Long thoracic</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Medial antebrachial cutaneous</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Medial brachial cutaneous</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Median (above midstream)</td>
<td>39</td>
<td>44</td>
</tr>
<tr>
<td>Median (anterior interosseous branch)</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Median (below midstream)</td>
<td>39</td>
<td>10</td>
</tr>
<tr>
<td>Radial palmar digital of thumb</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Ulnar palmar digital of thumb</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Radial palmar digital of index finger</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Ulnar palmar digital of index finger</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Radial palmar digital of middle finger</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Ulnar palmar digital of middle finger</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Radial palmar digital of ring finger</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Musculocutaneous</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Radial (upper arm with loss of triceps)</td>
<td>5</td>
<td>42</td>
</tr>
<tr>
<td>Radial (allow with sparing of triceps)</td>
<td>5</td>
<td>35</td>
</tr>
</tbody>
</table>

Calculate Sensory Impairment

Max sensory value × Percent deficit found by doctor = Actual sensory value

39 UE × 25% = 10 UE
Calculate Motor Value Impairment

<table>
<thead>
<tr>
<th>Max motor value</th>
<th>Percent deficit found by doctor</th>
<th>Actual motor value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 UE</td>
<td>25%</td>
<td>3 UE</td>
</tr>
</tbody>
</table>

Problem #3

Combine motor and sensory impairments and convert to WP

10 C 3 = 13 UE x .6 = 8 WP

Adjust to PD