# Extent of Injury

## A.M. EOI - PART IB:

- This will include 3 cases
  - ✓An MMI/ IR case, that developed to an EOI case.
  - ✓An EOI case that developed as a result of a POD
  - ✓An original EOI case.

**As we go through the cases, pay attention to the EOI process!**

# Extent of Injury Evaluation

# Analysis of Injury

**SEVERAL IMPORTANT ELEMENTS:**

- ✓ **Mechanism of injury (MOI) is an important concept in the analysis of an injury.**
  - The MOI is defined by the **direction** of force in relation to the injured segment and the **degree** of force .
  - The claimed diagnoses MUST make sense with the claimed MOI
- ✓ **The timeline of subjective complaints and objective findings must be consistent with the MOI and the injury model.**

## Extent of Injury Evaluation

## Analysis of Injury

**SEVERAL IMPORTANT ELEMENTS (cont):**

- ✓**Are any imaging findings consistent with those created by trauma or degenerative changes?**
  - What would you expect see based on the MOI?
  - Are there findings that would be PROBABLE to be consistent with an AGGRAVATION?
- ✓**What does the EBM indicate in relation to the diagnoses noted in the records?**

# Extent of Injury Evaluation
## *Alternate Explanations*

**Designated Doctors must be cognizant of alternate explanations for the continued perceived or claimed symptoms or diagnoses:**

A different musculoskeletal or neurologic ***"usual disease of life"*** mimicking the proposed work-related injury.

**Non-Injury related factors:**

- Misattribution of symptoms to an injury event
- Subconscious secondary gain
- Conscious manipulation

# CASE 1

# Designated Doctor Evaluation Case Study #1

**LET'S TEST OUR SKILLS**

**WITH A CASE THAT CORRELATES:**

**The Mechanism of injury (MOI)**
**History (HX)**
**Physical Exam (PE)**
**Imaging**
**Evidence Based Medicine (EBM)**

# Designated Doctor Evaluation
# Case Study #1

Insurance carrier requests DD exam to determine

**MMI and IR.**

Remember, DWC -32 no longer lists conditions currently “accepted by the insurance carrier”.

For this case, your review of the medical records indicate that there is at least a diagnosis of:

**Right shoulder strain**

# Designated Doctor Evaluation
# DWC Form-32
# V. Purpose for Examination

DWC032

**Part 5. Purpose of examination**

**31. Requester:** Check boxes A through G next to the issues you want the designated doctor to address and provide the requested information.

| | |
|---|---|
| [X] | **A. Maximum medical improvement (MMI) -** Has the injured employee reached MMI? If so, on what date? Statutory MMI date (if any) _____xx/xx/xx (mm/dd/yyyy) |
| [X] | **B. Impairment rating (IR) -** What is the injured employee's percentage of permanent impairment? MMI Date* _____ (mm/dd/yyyy) (required only if Box A is **not** checked)<br><br>*The MMI date determined valid by a final DWC decision, court, or agreement of the parties. |
| [ ] | **C. Extent of injury** List all injuries (diagnoses, body parts or conditions) in question, claimed to be caused by, or naturally resulting from the accident or incident **and** describe the accident or incident that caused the claimed injury. The designated doctor will answer whether they were a substantial factor in bringing about the additional claimed injuries or conditions, and without it, the additional injuries or conditions would have not occurred. |

# Designated Doctor Evaluation
# Case Study

Before the evaluation, the DD reviews the medical records, considering;

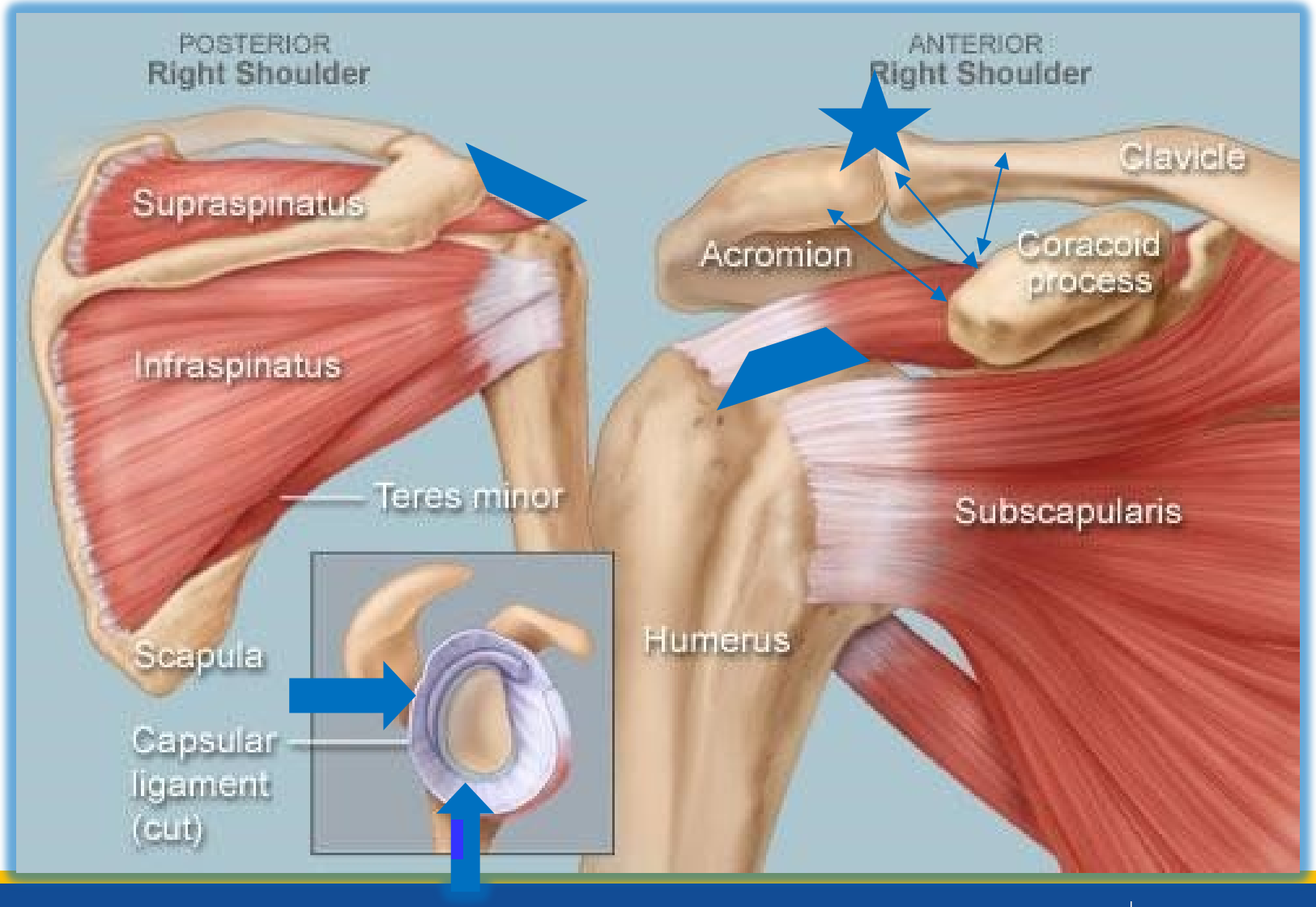
- Additional questions that should be asked during the history based on records;
- Pertinent positive and negative findings on the clinical examinations in the records;
- Relevant anatomy related to the compensable diagnosis / EOI issues, and
- Appropriate evidence-based medicine(EBM) regarding the condition or diagnosis.

# Extent of Injury Evaluation
# Case Study

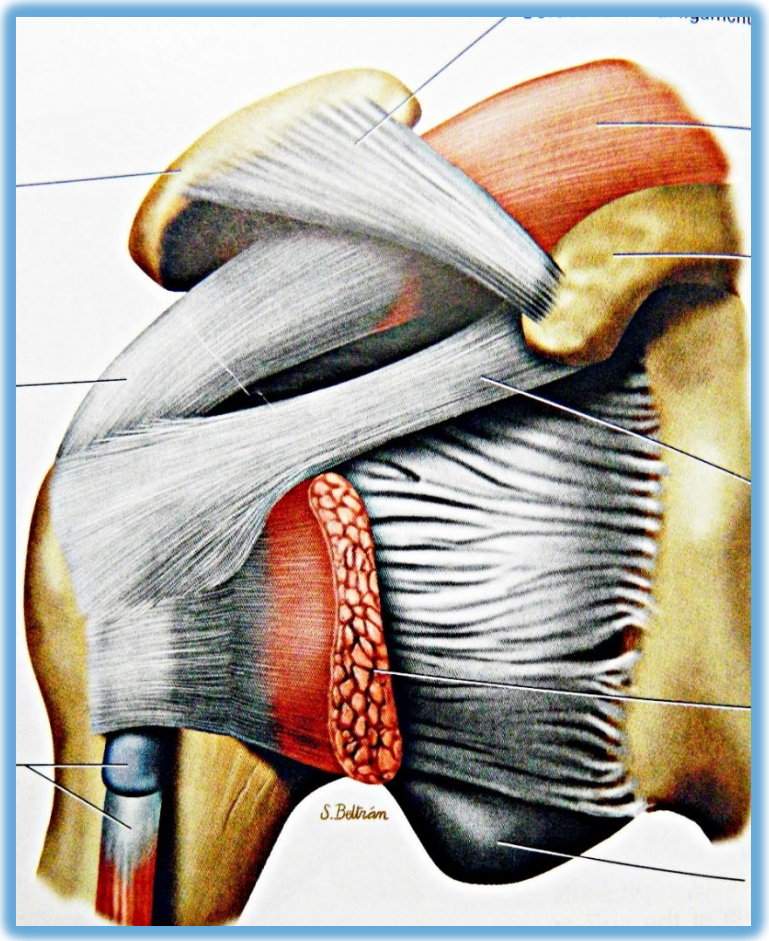
**For this case study, let's review:**

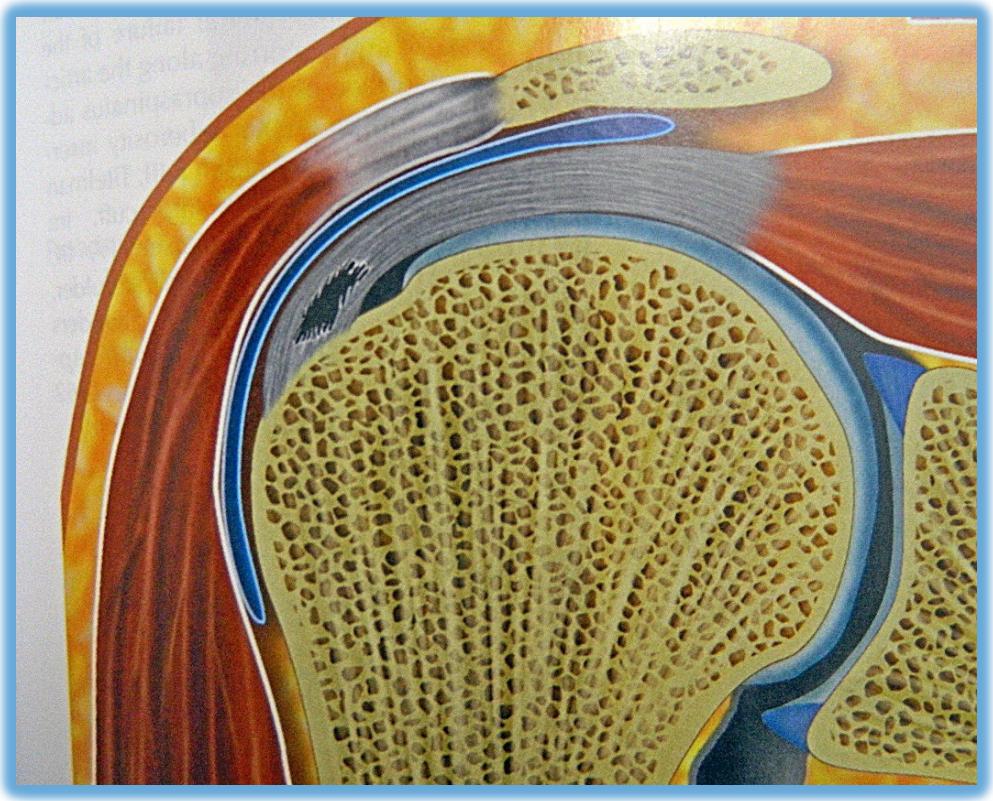
- Relevant anatomy
- How that relates to examination findings, imaging studies & EBM

# Designated Doctor Evaluation - Case Study
# Landmarks of the Shoulder



# Designated Doctor Evaluation Case Study
# Schematic Frontal View of Right Shoulder



**Coronal Cross-Section**
**Example of Interstitial Tear**

# Designated Doctor Evaluation
# MRI of the Shoulder - Rotator Cuff Tears

- **Complete** Rotator Cuff Tear (CRCT)

  Full thickness and full width

- **Full thickness** rotator cuff tear (FTRCT)

  Vertical with a connection from joint to bursa, NOT involving the whole width of tendon

- **Partial thickness** rotator cuff tear (PTRCT)

  Bursal surface,

  Articular surface,

  Intrasubstance

# Designated Doctor Evaluation
# MRI of the Shoulder - Rotator Cuff Tears

## Complete Rotator Cuff Tear (CRCT) – in general

- Extend from articular to bursal surface, most commonly in supraspinatus tendon.
- A direct sign of rotator cuff tear is presence of tendon defect filled with fluid
- Tendon retraction may also be present.
- Indirect signs of complete RCT on MRI are:
  - subdeltoid bursal effusion; medial dislocation of the biceps; fluid along the biceps tendon; and diffuse loss of tendon volume.

# Designated Doctor Evaluation
# MRI of the Shoulder - Rotator Cuff Tears

**Full thickness partial tear:**

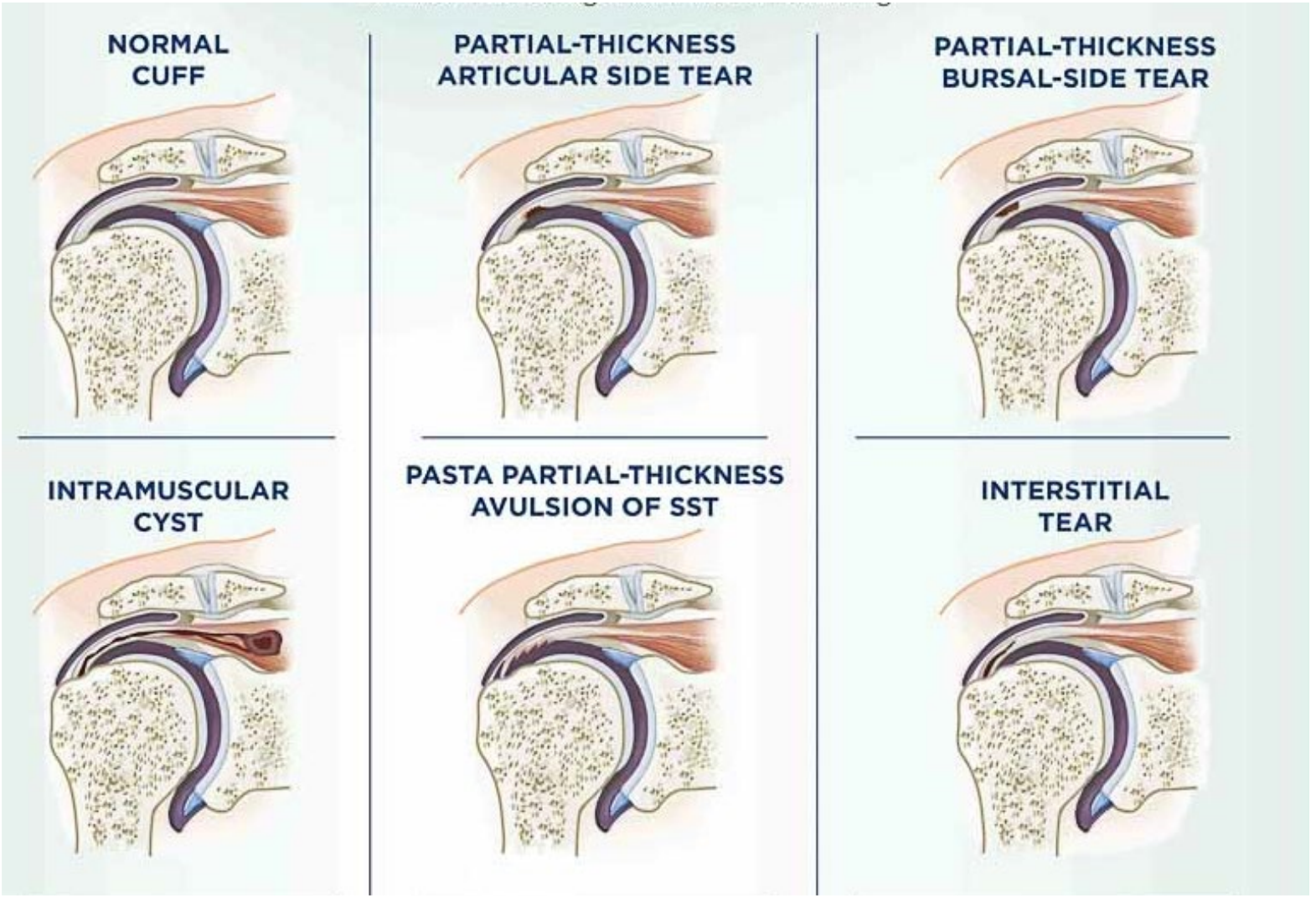
- Hyperintense signal area within the tendon on T2W, fat-suppressed and GRE sequences (fluid signal). These may appear as:
  - Extending to either the bursal or articular surface.
  - Intrasubstance or interstitial due to delamination of the intrasubstance fibers.
  - Retraction of tendinous fibers from the distal insertion onto the greater tuberosity may also be considered partial tear.

# Designated Doctor Evaluation
# MRI of the Shoulder - Rotator Cuff Tear

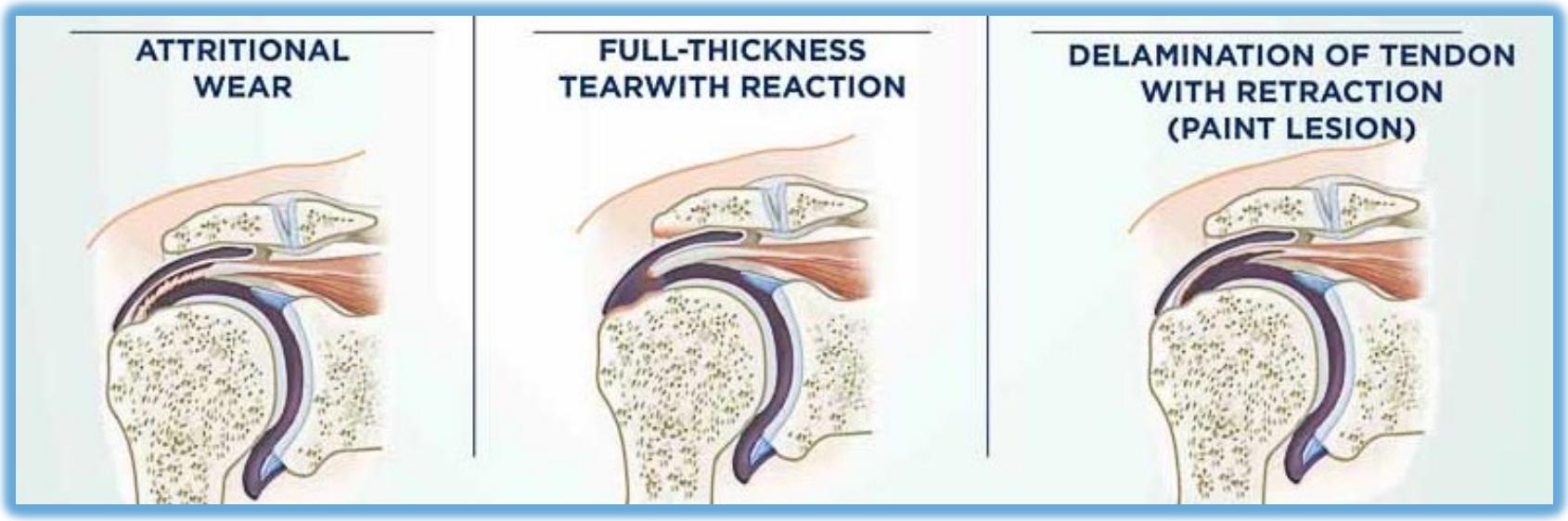
**Signs of Chronicity:**

- Degenerative changes at acromioclavicular (AC) joint; and
- AC joint cysts
- Muscle atrophy and fatty replacement in the muscle of the torn tendon. This is a process that takes some time. This can graded using:
    - Goutallier classification; or
    - Tangent sign or scapular ratio

# Designated Doctor Evaluation
# Rotator Cuff Tear Classification



# Designated Doctor Evaluation
# Rotator Cuff Tear Classification



# Designated Doctor Evaluation
# MRI Imaging

## Ordering of Imaging:

- Should be based on a ***presumptive diagnosis***.
- Should meet **INDICATIONS** for testing; *"a valid reason to use a certain test".*
- Should be no **CONTRAINDICATIONS** for testing; *"a risk of a procedure or test that outweighs the benefits".*
    - What is net benefit?
    - Cost?
    - **Will it result in unnecessary treatment of incidental findings**?

# Designated Doctor Evaluation
# Correlation of Imaging to Clinical Examination

- Imaging is a “snapshot” of the anatomic structure.
- Imaging cannot convey the biomechanics or function of the area, and certainly not what clinical symptoms may be present.
- A good clinical examination will help to tease out what imaging findings may be relevant.
- **A doctor must rely upon the mechanism of injury, other historical information and evidence-based medicine to make a causation analysis.**

# Designated Doctor Evaluation
# Correlation of Imaging to Clinical Examination

- **Importance of Correlation of the Imaging Findings to the MOI and the Clinical Findings.**
- **Consider the following references:**
  - ✓Sher J.S., Uribe J.W., Posada A., Murphy B.J., Zlatkin M.B. **Abnormal findings on magnetic resonance images of asymptomatic shoulders.** J Bone Joint Surg Am. 1995; 77:10–15
  - ✓Templehoff S, Rupp S, Seil R. **Age-related prevalence of rotator cuff tears in asymptomatic shoulders**. Journal of Shoulder and Elbow Surgery, Volume 8, Issue 4, 1999; 296-9.

# Designated Doctor Evaluation
# Correlation of Imaging to Clinical Examination

- Boersma EZ, Crijns TJ, Nijhuis-van der Sanden MWG, Edwards MJR, Tonn MD, Ring D, Janssen SJ. **Accuracy and reliability of MRI reports to determine which shoulder is symptomatic for workers compensation patients with unilateral symptoms.** Journal of Orthopedics. 21 (2020) 199-202.
- Liu TG, Loung N, Edwards L, Ring D, Bernacki E, Tonn MD. **Patients Older than 40 Years with Unilateral Occupational Claims for New Shoulder and Knee Symptoms Have Bilateral MRI Changes.** Clinical Research. Clin Orthop Relat Res. DOI 10.1007/s11999-017-5401-y.

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study - History

- 52 year-old right hand dominant male with a reported date of injury of March 9, 2019.
- Loading a full heavy lumber carrier, which started to tip, causing the lumber to shift.  He tried to catch the wood load with his right arm and hold the carrier with his left arm.
- Felt a sudden and heavy pull to his right arm as it was away from his side (abduction / distraction force).
- The injured employee described that he had an immediate pain and an audible and palpable pop at his superior lateral right shoulder.

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study - History

- Within hours the claimant had difficulty lifting his right arm to the front or to his side.
- After a few weeks of resting the shoulder, his pain diminished.
- It hurt worse to lift the right arm away from his body than in front of the body
- Records demonstrate consistent location of pain at the anterolateral superior shoulder and not his AC joint

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study - History

- Current pain is at the leading edge of supraspinatus of the right shoulder
- Worse with range of motion of 80 to 100 degrees of abduction.
- Pain can radiate to the right side of the neck; but doesn't worsen with head or neck movements.
- Pain can ache to the upper arm but denies pain or paresthesias into his right forearm and hand

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study - History

- Initial x-rays of the right shoulder were negative except for some AC joint arthrosis.
- Had initial 6 visits of PT with limited response with persistent / consistent findings on exam
- Due to history and clinical findings, the treating doctor developed a presumptive diagnosis of an acute rotator cuff tear

# Designated Doctor Evaluation
# MRI of the Shoulder

**CASE STUDY:**

**MRI of the Right Shoulder:**

- Completed ~ 6 weeks after the date of injury
- 1.5 T magnet and trauma sequences

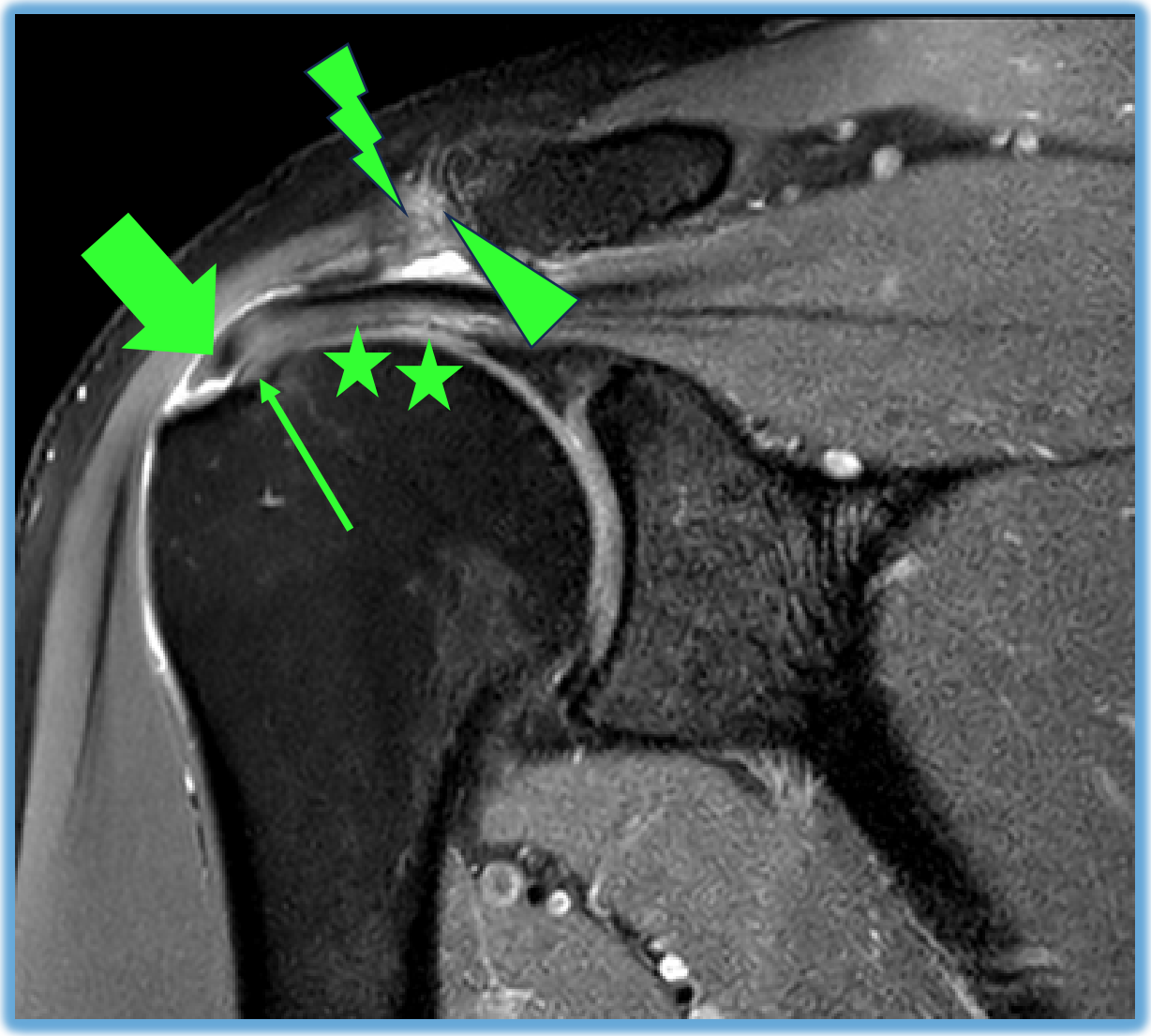
**Findings:**

- High grade partial thickness supraspinatus rotator cuff tear
- Tendinosis of the supraspinatus, without tendon thickening
- Mild AC joint arthritis
- No fatty infiltration of the supraspinatus muscle

# DD Evaluation: Case Study

**Coronal oblique STIR MRI of the shoulder**

- Partial rotator cuff tear at bursal surface with tendinosis
- Large arrow = tear
- Skinny arrow = intact fibers
- Stars = Above zone of tendinosis
- Lightning Bolt = subchondral edema on acromial side of AC joint
- Triangle = Inferior AC spur



# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study – Treating doctor

- Provides a subacromial injection
- Additional 6 visits of PT with some improvements in strength and function below shoulder level, but persistent pain when training above shoulder level necessary for his job.
- Additional treatment denied as he has had all appropriate treatment per the ODG for a shoulder "strain"

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study - DD Examination

- No evidence of deformity or atrophy involving the right shoulder girdle.
- “Popeye sign” was negative.
- No winging of the scapula.
- No muscle atrophy in the upper arms or forearms by measurement nor suprascapular/infrascapular fossa.
- Tenderness was present at the anterolateral greater tuberosity at the supraspinatus insertion.
- No tenderness over the AC joint.

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study - DD Examination

- Active left shoulder ROM was full in all planes.
- Passive ROM of the right shoulder was full.
- Active right shoulder ROM in degrees: flexion 150 and abduction 145, both with a significant positive impingement interval from 85 to 110 degrees.
- Extension 35, adduction 15.
- Internal rotation from 90 degrees abduction was to 15 degrees and painful at area of maximal tenderness.
- External rotation from 90 degrees abduction was to 60 degrees.

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study - DD Examination

- Manual muscle testing 4/5 at the supraspinatus and infraspinatus due to pain near the greater tuberosity.
- No other C5 or C6 innervated muscles with “weakness” and no C5 or C6 dermatomal sensory loss
- Partially positive drop arm test, a positive Hawkins-Kennedy test and a mildly positive Yergason’s test.
- Crossed adduction/ Scarf test was negative at the AC joint. Negative lift off test for subscapularis pain. Negative apprehension test in supine.

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study – Imaging

- Already Reviewed for this case
- HOWEVER, you will want to discuss in your DD report:
  - ✓Pertinent positives that correlate with clinical findings
  - ✓Pertinent negatives that DO NOT correlate with clinical findings
  - ✓What does the EBM say about these findings individually OR considered as a whole

# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study – Evidence-based Medicine

Appearance of the following on MRIs occur with increased frequency with each decade of life even in asymptomatic individuals:

- rotator cuff tendinosis
- partial rotator cuff tears
- complete rotator cuff tears
- AC joint arthrosis
- labral tears and degeneration

# Designated Doctor Evaluation
# DD Examination for MMI and IR

- **To determine MMI (and IR), the DD must determine the compensable diagnoses**
- **Similar to an EOI analysis, DD should consider:**

  mechanism of injury;
  timing of complaints / findings;
  clinical examination;
  imaging; and
  evidence-based medicine
- **Once compensable diagnoses determined, those diagnoses may be APPLIED to the ODG.**

# Designated Doctor Evaluation
# DD Examination for MMI and IR

## Case Study

- DD determines the diagnosis based on the review of records and the certifying examination.
- The DD's opinion is that the events of the DOI produced or caused:

  Right shoulder strain, AND

  Right Shoulder – High grade partial thickness supraspinatus rotator cuff tear

  ***#Must explain with a process similar to EOI analysis*** **[See next slide.]**

# Designated Doctor Evaluation
# DD Examination for MMI and IR

## Case Study

**#Must explain with a process similar to EOI analysis .**

- *"I am aware that there is EBM that indicates that asymptomatic individuals of this claimant's age can have rotator cuff tears present on MRI imaging.*
- *However, in this case the mechanism is consistent with a mechanism that is known to cause acute rotator cuff tears. The MOI was a forceful eccentric contraction in the line of pull of the muscle tendon unit of the supraspinatus.*

# Designated Doctor Evaluation
# DD Examination for MMI and IR

## Case Study

**#Must explain with a process similar to EOI analysis.**

- **"***The clinical exam immediately after the DOI and through out the records were consistent with a symptomatic acute rotator cuff tear. These findings were consistent with my exam AND with the imaging in this claim".*
- *"For this reason, I am including the additional diagnosis of "High grade partial thickness supraspinatus rotator cuff tear" as a compensable diagnosis for my consideration of MMI".*

# Designated Doctor Evaluation
# DD Examination for MMI and IR

- **The DD reviewed the treatments the ODG recommended for the compensable diagnosis**
- **The DD reported that the claimant was NOT at MMI:**

*"Based on the records, my certifying exam, the clinical diagnoses and the ODG, including Appendix D, there is reasonable medical probability that additional treatment would be anticipated to result in further material recovery".*

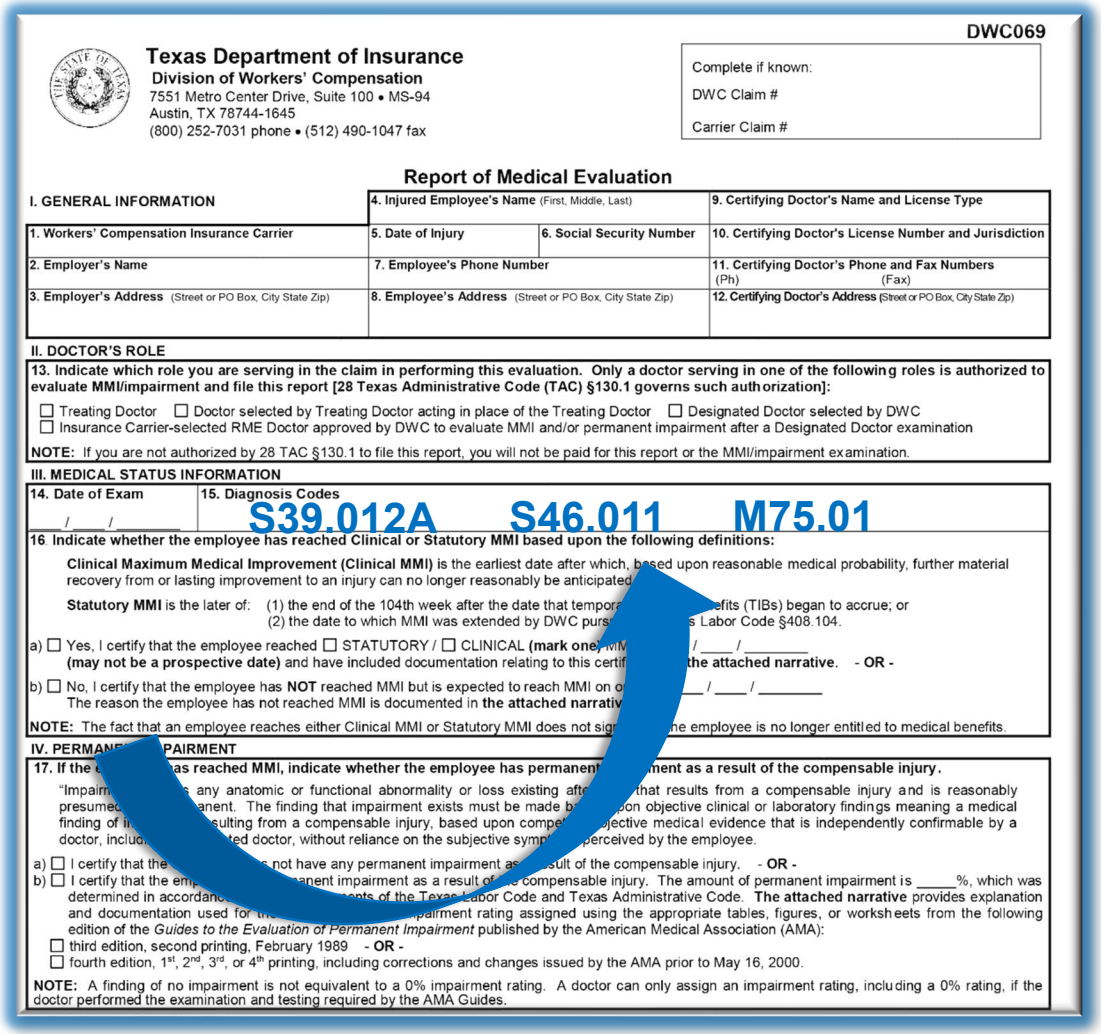
# Designated Doctor Evaluation
# Rotator Cuff Tear

## Case Study
DWC Form-69

S39.012A = Shoulder strain, right

S46.01 = Strain of the muscle(s) and tendon(s) of the rotator cuff of the shoulder

M75.01 = Unspecified rotator cuff tear or rupture



DWC069

**Texas Department of Insurance**
**Division of Workers' Compensation**
7551 Metro Center Drive, Suite 100 • MS-94
Austin, TX 78744-1645
(800) 252-7031 phone • (512) 490-1047 fax

Complete if known:
DWC Claim #
Carrier Claim #

**Report of Medical Evaluation**

**I. GENERAL INFORMATION**

1. Workers' Compensation Insurance Carrier
2. Employer's Name
3. Employer's Address (Street or PO Box, City State Zip)
4. Injured Employee's Name (First, Middle, Last)
5. Date of Injury
6. Social Security Number
7. Employee's Phone Number
8. Employee's Address (Street or PO Box, City State Zip)
9. Certifying Doctor's Name and License Type
10. Certifying Doctor's License Number and Jurisdiction
11. Certifying Doctor's Phone and Fax Numbers (Ph) (Fax)
12. Certifying Doctor's Address (Street or PO Box, City State Zip)

**II. DOCTOR'S ROLE**

13. Indicate which role you are serving in the claim in performing this evaluation. Only a doctor serving in one of the following roles is authorized to evaluate MMI/impairment and file this report [28 Texas Administrative Code (TAC) §130.1 governs such authorization]:

☐ Treating Doctor ☐ Doctor selected by Treating Doctor acting in place of the Treating Doctor ☐ Designated Doctor selected by DWC
☐ Insurance Carrier-selected RME Doctor approved by DWC to evaluate MMI and/or permanent impairment after a Designated Doctor examination

**NOTE:** If you are not authorized by 28 TAC §130.1 to file this report, you will not be paid for this report or the MMI/impairment examination.

**III. MEDICAL STATUS INFORMATION**

14. Date of Exam ___/___/_____
15. Diagnosis Codes **S39.012A** **S46.011** **M75.01**

16. Indicate whether the employee has reached Clinical or Statutory MMI based upon the following definitions:

**Clinical Maximum Medical Improvement (Clinical MMI)** is the earliest date after which, based upon reasonable medical probability, further material recovery from or lasting improvement to an injury can no longer reasonably be anticipated.

**Statutory MMI** is the later of: (1) the end of the 104th week after the date that tempora…efits (TIBs) began to accrue; or (2) the date to which MMI was extended by DWC purs… Labor Code §408.104.

a) ☐ Yes, I certify that the employee reached ☐ STATUTORY / ☐ CLINICAL **(mark one)** MM… ___/___/_____ **(may not be a prospective date)** and have included documentation relating to this certif… **the attached narrative.** **- OR -**

b) ☐ No, I certify that the employee has **NOT** reached MMI but is expected to reach MMI on o… ___/___/_____ The reason the employee has not reached MMI is documented in **the attached narrativ…**

**NOTE:** The fact that an employee reaches either Clinical MMI or Statutory MMI does not sig… employee is no longer entitled to medical benefits.

**IV. PERMAN… PAIRMENT**

17. If the e… as reached MMI, indicate whether the employee has permanent… ment as a result of the compensable injury.

"Impair… any anatomic or functional abnormality or loss existing afte… that results from a compensable injury and is reasonably presumed… anent. The finding that impairment exists must be made b… on objective clinical or laboratory findings meaning a medical finding of i… sulting from a compensable injury, based upon compe… jective medical evidence that is independently confirmable by a doctor, includ… ted doctor, without reliance on the subjective symp… perceived by the employee.

a) ☐ I certify that the … not have any permanent impairment as… sult of the compensable injury. **- OR -**

b) ☐ I certify that the emp… anent impairment as a result of… compensable injury. The amount of permanent impairment is _____%, which was determined in accordanc… nts of the Texas Labor Code and Texas Administrative Code. **The attached narrative** provides explanation and documentation used for th… pairment rating assigned using the appropriate tables, figures, or worksheets from the following edition of the *Guides to the Evaluation of Permanent Impairment* published by the American Medical Association (AMA):

☐ third edition, second printing, February 1989 **- OR -**
☐ fourth edition, 1st, 2nd, 3rd, or 4th printing, including corrections and changes issued by the AMA prior to May 16, 2000.

**NOTE:** A finding of no impairment is not equivalent to a 0% impairment rating. A doctor can only assign an impairment rating, including a 0% rating, if the doctor performed the examination and testing required by the AMA Guides.

# Designated Doctor Evaluation Rotator Cuff Tear

## Case Study

DWC Form-69

**MMI = Not at MMI;**

ODG would support additional treatment for these diagnoses, AND would be anticipated to result in further material recovery.

DWC069

**Texas Department of Insurance**
**Division of Workers' Compensation**
7551 Metro Center Drive, Suite 100 • MS-94
Austin, TX 78744-1645
(800) 252-7031 phone • (512) 490-1047 fax

Complete if known:
DWC Claim #
Carrier Claim #

**Report of Medical Evaluation**

**I. GENERAL INFORMATION**

4. Injured Employee's Name (First, Middle, Last) | 9. Certifying Doctor's Name and License Type
1. Workers' Compensation Insurance Carrier | 5. Date of Injury | 6. Social Security Number | 10. Certifying Doctor's License Number and Jurisdiction
2. Employer's Name | 7. Employee's Phone Number | 11. Certifying Doctor's Phone and Fax Numbers (Ph) (Fax)
3. Employer's Address (Street or PO Box, City State Zip) | 8. Employee's Address (Street or PO Box, City State Zip) | 12. Certifying Doctor's Address (Street or PO Box, City State Zip)

**II. DOCTOR'S ROLE**

13. Indicate which role you are serving in the claim in performing this evaluation. Only a doctor serving in one of the following roles is authorized to evaluate MMI/impairment and file this report [28 Texas Administrative Code (TAC) §130.1 governs such authorization]:

☐ Treating Doctor ☐ Doctor selected by Treating Doctor acting in place of the Treating Doctor ☐ Designated Doctor selected by DWC
☐ Insurance Carrier-selected RME Doctor approved by DWC to evaluate MMI and/or permanent impairment after a Designated Doctor examination

X

**NOTE:** If you are not authorized by 28 TAC §130.1 to file this report, you will not be paid for this report or the MMI/impairment examination.

**III. MEDICAL STATUS INFORMATION**

14. Date of Exam ___/___/_____
15. Diagnosis Codes **S39.012A S46.011 M75.01**

16. Indicate whether the employee has reached Clinical or Statutory MMI based upon the following definitions:

**Clinical Maximum Medical Improvement (Clinical MMI)** is the earliest date after which, based upon reasonable medical probability, further material recovery from or lasting improvement to an injury can no longer reasonably be anticipated.

**Statutory MMI** is the later of: (1) the end of the 104th week after the date that temporary income benefits (TIBs) began to accrue; or (2) the date to which MMI was extended by DWC pursuant to Texas Labor Code §408.104.

a) ☐ Yes, I certify that the employee reached ☐ STATUTORY / ☐ CLINICAL **(mark one)** MMI on ___/___/_____ **(may not be a prospective date)** and have included documentation relating to this certification in **the attached narrative.** - OR -

X

b) ☐ No, I certify that the employee has **NOT** reached MMI but is expected to reach MMI on or about ___/___/_____ **6 months after DD exam**
The reason the employee has not reached MMI is documented in **the attached narrative.**

**NOTE:** The ... an employee reaches either Clinical MMI or Statutory MMI does not signify that the ... is no ... benefits.

**IV. PERMA... AIRMENT**

**17. If the empl... ...s reached MMI, indicate whether the employee has permanent impairment as a result of the compensable injury.**

"Impairment" ... any anatomic or functional abnormality or loss existing after MMI that results from a compensable injury and is reasonably presumed to be ...anent. The finding that impairment exists must be made based upon objective clinical or laboratory findings meaning a medical finding of impair... resulting from a compensable injury, based upon competent objective medical evidence that is independently confirmable by a doctor, including a ...signated doctor, without reliance on the subjective symptoms perceived by the employee.

a) ☐ I certify that the ...loyee does not have any permanent impairment as a result of the compensable injury. - OR -
b) ☐ I certify that the ...ployee has permanent impairment as a result of the compensable injury. The amount of permanent impairment is _____%, which was determined in a...ordance with the requirements of the Texas Labor Code and Texas Administrative Code. **The attached narrative** provides explanation and documenta...on used for the calculation of the impairment rating assigned using the appropriate tables, figures, or worksheets from the following edition of the *Guides to the Evaluation of Permanent Impairment* published by the American Medical Association (AMA):
☐ third edition, second printing, February 1989 - OR -
☐ fourth e...on, 1st, 2nd, 3rd, or 4th printing, including corrections and changes issued by the AMA prior to May 16, 2000.

NOT... ...ding of no impairment is not equivalent to a 0% impairment rating. A doctor can only assign an impairment rating, including a 0% rating, if the ...formed the examination and testing required by the AMA Guides.

## Designated Doctor Evaluation

# DD Examination for EXTENT OF INJURY

## Case Study #1

- The DD submitted the report and DWC-69 to all parties.
- The DD Exam for MMI and IR resulted in a request for a Second Exam.
- Injured employee's representative requests **Extent of Injury** to be addressed, so that it can be formally adjudicated.

# Second DD Exam
# Extent of Injury Evaluation

**2nd DWC-32**

**31C. Extent of Injury**

**Additional claimed diagnoses / conditions:**

Right Shoulder –

- High grade partial thickness supraspinatus rotator cuff tear
- Tendinosis of the supraspinatus
- Mild AC joint arthritis
- No fatty infiltration of the supraspinatus muscle

***(ALL from the MRI report)***

# Extent of Injury Evaluation
# DWC-32 V. Purpose for Examination

| | |
|---|---|
| X | **C. Extent of injury** List all injuries (diagnoses, body parts or conditions) in question, claimed to be caused by, or naturally resulting from the accident or incident **and** describe the accident or incident that caused the claimed injury. The designated doctor will answer whether they were a substantial factor in bringing about the additional claimed injuries or conditions, and without it, the additional injuries or conditions would have not occurred. |

**Right Shoulder –**
**High grade partial thickness supraspinatus rotator cuff tear,**
**Tendinosis of the supraspinatus,**
**Mild AC joint arthritis,**
**No fatty infiltration of the supraspinatus muscle**

# Second DD Exam
# Extent of Injury Evaluation

- For EOI, follow the same process as DEFINING the COMPENSABLE INJURY, but with more detail and provision of evidence-based medicine for the EOI evaluation.
- Review the template for the EOI process – this is not mandatory by rule – but is helpful to assist you in your thought process. [More on this later.]
- As long as there are no significant changes in the condition, then the DD analysis would be the same.

# Second DD Exam
# Extent of Injury Evaluation

- Considerations for looking at the records after your first evaluation or your first exam and the subsequent exam
  - ✓ Look for any interim changes in the condition over time. Do any changes make sense with other historical facts?
  - ✓ Are your first and 2nd exam consistent with one another?
  - ✓ Are there evolving non-injury related factors?
  - ✓ Are there any developing usual disease of life that affect your compensable diagnosis decision OR would affect treatment options?

# EOI – Case #1: Report

- Address ***Extent of Injury***, with a causation analysis that the events of the DOI **were** a substantial factor in producing or aggravating.
- In this case the DD opinion is that the compensable diagnosis ***does*** extend to:
  - ✓ **Right Shoulder Strain**

  ***AND*** *from the Box C. additional claimed injuries*
  - ✓ **Right Shoulder High grade partial thickness supraspinatus rotator cuff tear**

# EOI – Case #1 - Report

- Address ***Extent of Injury***, with a causation analysis that that explains whether the events on the date of injury **were** or **were not** a substantial factor in producing or aggravating and therefore the compensable injury **does** or **does not** extend to:

  **Right shoulder**

  Tendinosis of the supraspinatus,

  Mild AC joint arthritis,

  No fatty infiltration of the supraspinatus muscle

- **WHAT do you as a DD think???**

# EOI – Case #1 - Report

- **Tendinosis of the supraspinatus**
  - ✓Tendinosis is due to attritional breakdown of the tendon
- **Mild AC joint arthritis**
  - ✓AC arthritis / arthrosis is one of the first degenerative conditions to arise in the shoulder.
  - ✓MOI was not consistent with injury to AC joint.
  - ✓No imaging findings of aggravation and no clinical findings consistent with symptomatic AC arthritis.
- **No fatty infiltration of the supraspinatus muscle**
  - ✓Fatty infiltration is a sign of chronicity of rotator cuff tear.
  - ✓This is one of the factors that allowed you to INCLUDE the high-grade partial rotator cuff tear

# Second DD Exam
# Extent of Injury Evaluation

- When your opinion is that some or all of the additional claimed DXS / conditions **ARE NOT** COMPENSABLE INJURIES.

  **YOU MUST STATE WHY.**

- The **narrative report** would EXPLAIN which of the additional claimed diagnoses **were** or **were not** considered to be compensable, following a structured analysis.

# Second DD Exam
# Extent of Injury Evaluation

**Structured analysis**.

- **Each of the diagnoses must be discussed**
  - ✓ Describe what each of the diagnoses listed in Box C are?
  - ✓ These may be described as a synonymous term, especially if it is more consistent with current literature.
  - ✓ These may be grouped together for ease of discussion, if it is appropriate and consistent with the EBM

# Second DD Exam
# Extent of Injury Evaluation

- The **DWC-68** would give details as to WHICH of the additional claimed injuries **were** and **were not** determined to be compensable by the DD.

- The revised DWC-68 includes a section where the DD may ADD a diagnosis.
  [Revised on 06/05/2023]

- Please see the DWC-68 that would be appropriate for the DD determination of EOI

# DWC Form 68 - DD Examination Data

**Part 3. Purpose of exam**

**15. Issues considered during designated doctor's exam.**

[X] **a) Extent of injury**

**List all items that were included on DWC Form-032 Part 5, Box 31C and any other additional diagnoses or conditions you found to be a part of the compensable injury.** Did you determine that the accident or incident giving rise to the compensable injury was a substantial factor in bringing about the additional claimed diagnoses or condition? Provide your answer below by checking Yes or No for each additional claimed diagnosis or condition. Assign the most reasonable corresponding diagnosis codes for each additional claimed diagnosis/condition. **Attach additional pages, if necessary.**

| Additional claimed diagnosis or condition | Yes | No | Diagnosis code 1 | Diagnosis code 2 | Diagnosis code 3 | Diagnosis code 4 |
|---|---|---|---|---|---|---|
| 1) Tendinosis of the supraspinatus | [ ] | [X] | M67.813 | | | |
| 2) Mild AC joint arthritis | [ ] | [X] | M19.011 | | | |
| 3) No fatty infiltration of the supraspinatus muscle | [ ] | [X] | M62.511 | | | |
| 4) Right Shoulder High grade partial thickness supraspinatus rotator cuff tear | [X] | [ ] | M75.111 | | | |
| 5) | [ ] | [ ] | | | | |
| 6) | [ ] | [ ] | | | | |
| **Additional compensable diagnoses or conditions found by the designated doctor** | | | Diagnosis code 1 | Diagnosis code 2 | Diagnosis code 3 | Diagnosis code 4 |
| 7) | | | | | | |
| 8) | | | | | | |

# QUESTIONS ABOUT MMI / EXTENT of INJURY

# CASE 1?

# CASE 2

# POD for MMI, IR and EOI - Case #2

This will be a case where you receive a **Presiding Officer Directive (POD)**

You are asked to address

- **MMI, IR and EOI and provide**
- **Multiple Certifications**

# MMI, IR and EOI Case #2

**History of Injury:**

- 45-year-old male warehouse worker with acute onset left sided low back pain four months ago after lifting a 150-lb toolbox.
- His lumbar spine was flexed and twisted awkwardly to the right at onset of lifting this heavy load.
- He felt and heard a pop on the left just below the waistline.

# MMI, IR and EOI - Case #2

**History of Injury (cont'd)**

- Medical records and history consistently document immediate left sided low back pain just below the waistline.
- Examination demonstrated tenderness focally on the left at the L5/S1 level, in the lower lumbar paraspinal muscles on the left, with a lumbar list to the right.
- This was accompanied by tenderness in the left sciatic notch and proximal radicular pain four days after DOI.

# MMI, IR and EOI – Case #2

## History of Injury (cont'd)

- Between 3 – 10 days after the DOI there was evolving pain, proximal to distal in the left leg with decreased sensation in the left S1 dermatome, slightly decreased left Achilles reflex and consistent sciatic nerve root tension signs demonstrated by left SLR in seated and supine.
- By 2 - 3 weeks after the DOI, there was evidence of weakness in the left hamstring, weak ankle and toe plantar flexors.

# MMI, IR and EOI – Case #2

## History of Injury (cont'd)

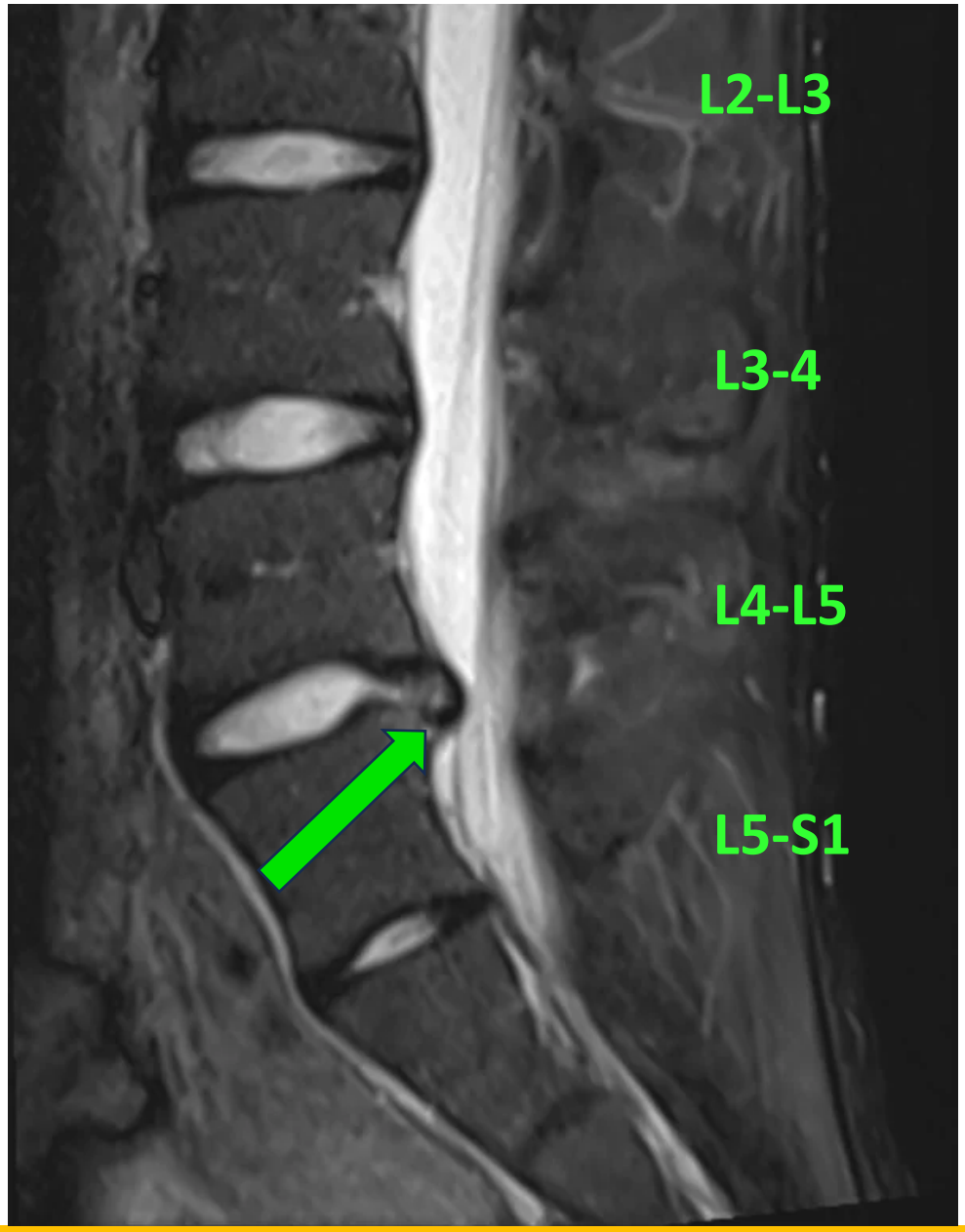
- Lumbar MRI scan at 6 weeks demonstrated:
  - L2-L3 and L3/L4 disc height loss and desiccation;
  - L4-L5 mild disc degeneration;
  - L5-S1 with 6 mm left posterolateral disc protrusion with impingement on the traversing left S1 nerve root.
  - No other significant changes of spondylosis

# MMI, IR and EOI – Case #2

## IMAGING

**STIR Sagittal Image**

**Left paracentral from Midline**



# MMI, IR and EOI - Case #2

**History of Injury (cont'd)**

- Signs and symptoms persist despite 10 visits of PT, NSAIDS, muscle relaxants and narcotic pain medication.
- ESI and surgery denied because any diagnoses other than a lumbar sprain/strain was disputed.

# MMI, IR and EOI – Case #2

- **You see the claimant as a DD 4 months post injury.**
- The POD specifies that the Insurance Carrier has accepted the lumbar sprain/strain to be compensable
- You are directed to provide multiple certifications:
  1. The carrier accepted conditions
  2. The carrier accepted conditions plus all the disputed conditions
  3. Your opinion as to the compensable conditions, if different from both 1 and 2

# MMI, IR and EOI Case #2

## EOI Disputed conditions

The POD lists additional injuries (diagnoses/body parts/conditions) in question, claimed to be caused by, or naturally resulting from accident or incident as:

- L2-3 and L3-4 disc desiccation
- L4/L5 disc degeneration
- L5/S1 disc protrusion with impingement on exiting left S1 nerve root

# MMI, IR and EOI - Case #2

The **DD's opinion** regarding the compensable injury MAY be:

- **The Carrier Compensable**
- **The Carrier Compensable PLUS ALL additional claimed injuries** (diagnoses/body parts/conditions)
- **OR a certification that includes:**
  - The injuries/diagnosis(es) the Carrier accepts;
  - None / Some / All the additional claimed injuries (diagnoses/body parts/conditions)
  - An ADDED diagnosis (es) that you determine after your review of the case specific information in the records (Mechanism / Timeline / Imaging / EBM)

# MMI, IR and EOI – Case #2

- **In this case, the DD defines the compensable injury for** certifying their opinion of MMI and IR **as:**
  - **Lumbar sprain/strain** (carrier accepted per POD)
  - **L5-S1 disc protrusion with impingement on exiting left S1 nerve root** (from POD list of additional claimed/disputed conditions)
  - **Left S1 radiculopathy** (determined from medical records and the DD exam)

# MMI, IR and EOI – Case #2

- Explain in your report the basis of your opinions regarding what you define as the compensable injury from the medical records and your certifying exam with a causation analysis.
- Explain your conclusion, not just provide a conclusion.
- May use the EOI template to ensure you cover all the important points to substantiate your opinion.

# MMI, IR and EOI – Case #2

- Address ***Extent of Injury***, with a causation analysis that the events of the DOI **were** a substantial factor in producing or aggravating.
- In this case the DD opinion is that the compensable diagnosis ***does*** extend to:
  - Lumbar sprain/strain (carrier accepted),
  - Left S1 radiculopathy (not included as “disputed” injury on the POD)
  - L5-S1 disc protrusion with impingement on exiting left S1 nerve root (is included as “disputed” injury on the POD)

# MMI, IR and EOI – Case #2

- Address ***Extent of Injury***, with a causation analysis that the events of the date of injury **was not** a substantial in producing or aggravating and therefore the composable injury **does not** extend to:
  - Disc desiccation at L2-3 and L3-4
  - Disc degeneration at L4-L5

# MMI, IR and EOI Case - #2

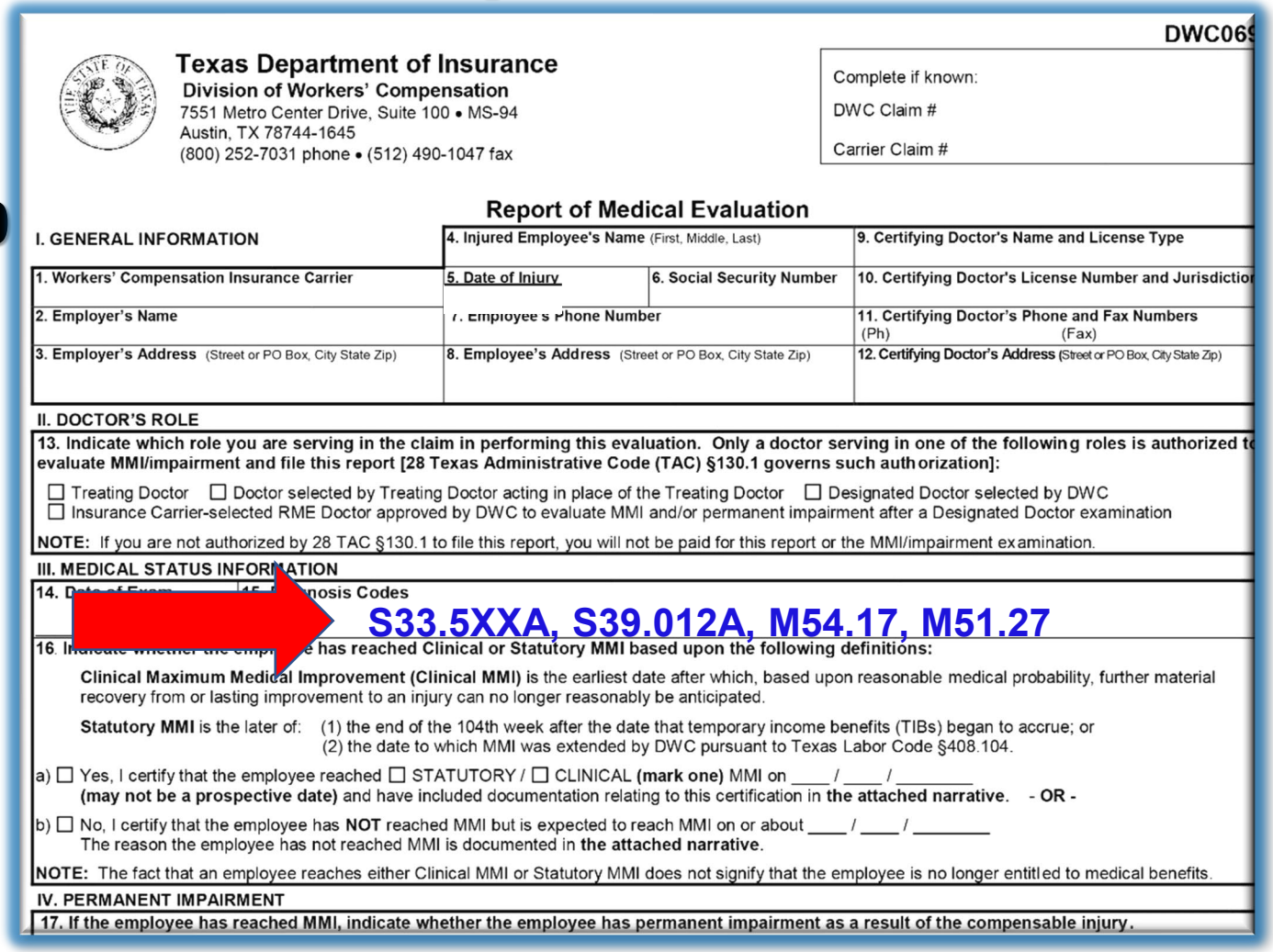
- **Designated Doctor's Opinion – Transmit the information as to your opinions to the DWC-69**

  - Lumbar sprain/strain
  - L5-S1 disc protrusion with impingement on exiting left S1 nerve root
  - Left S1 radiculopathy

  *The ICD-10 codes you use on the DWC-69 should match the diagnosis as best as possible*

# Certification- DD Opinion

**Label the Correct ICD-10 For the Diagnoses Included On your certification clearly in the appropriate box on the DWC-69**



DWC069

**Texas Department of Insurance**
**Division of Workers' Compensation**
7551 Metro Center Drive, Suite 100 • MS-94
Austin, TX 78744-1645
(800) 252-7031 phone • (512) 490-1047 fax

Complete if known:
DWC Claim #
Carrier Claim #

## Report of Medical Evaluation

**I. GENERAL INFORMATION**

| | | |
|---|---|---|
| 4. Injured Employee's Name (First, Middle, Last) | | 9. Certifying Doctor's Name and License Type |
| 1. Workers' Compensation Insurance Carrier | 5. Date of Injury / 6. Social Security Number | 10. Certifying Doctor's License Number and Jurisdiction |
| 2. Employer's Name | 7. Employee's Phone Number | 11. Certifying Doctor's Phone and Fax Numbers (Ph) (Fax) |
| 3. Employer's Address (Street or PO Box, City State Zip) | 8. Employee's Address (Street or PO Box, City State Zip) | 12. Certifying Doctor's Address (Street or PO Box, City State Zip) |

**II. DOCTOR'S ROLE**

**13. Indicate which role you are serving in the claim in performing this evaluation. Only a doctor serving in one of the following roles is authorized to evaluate MMI/impairment and file this report [28 Texas Administrative Code (TAC) §130.1 governs such authorization]:**

☐ Treating Doctor ☐ Doctor selected by Treating Doctor acting in place of the Treating Doctor ☐ Designated Doctor selected by DWC
☐ Insurance Carrier-selected RME Doctor approved by DWC to evaluate MMI and/or permanent impairment after a Designated Doctor examination

**NOTE:** If you are not authorized by 28 TAC §130.1 to file this report, you will not be paid for this report or the MMI/impairment examination.

**III. MEDICAL STATUS INFORMATION**

14. Date of Exam / 15. Diagnosis Codes

**S33.5XXA, S39.012A, M54.17, M51.27**

16. Indicate whether the employee has reached Clinical or Statutory MMI based upon the following definitions:

**Clinical Maximum Medical Improvement (Clinical MMI)** is the earliest date after which, based upon reasonable medical probability, further material recovery from or lasting improvement to an injury can no longer reasonably be anticipated.

**Statutory MMI** is the later of: (1) the end of the 104th week after the date that temporary income benefits (TIBs) began to accrue; or (2) the date to which MMI was extended by DWC pursuant to Texas Labor Code §408.104.

a) ☐ Yes, I certify that the employee reached ☐ STATUTORY / ☐ CLINICAL **(mark one)** MMI on ____ / ____ / _____ **(may not be a prospective date)** and have included documentation relating to this certification in **the attached narrative.** **- OR -**

b) ☐ No, I certify that the employee has **NOT** reached MMI but is expected to reach MMI on or about ____ / ____ / _____ The reason the employee has not reached MMI is documented in **the attached narrative.**

**NOTE:** The fact that an employee reaches either Clinical MMI or Statutory MMI does not signify that the employee is no longer entitled to medical benefits.

**IV. PERMANENT IMPAIRMENT**

**17. If the employee has reached MMI, indicate whether the employee has permanent impairment as a result of the compensable injury.**

# Certification- DD Opinion

## Complete the DWC Form 68 - New as of 6/5/23

☐ **a) Extent of injury**

**List all items that were included on DWC Form-032 Part 5, Box 31C and any other additional diagnoses or conditions you found to be a part of the compensable injury.** Did you determine that the accident or incident giving rise to the compensable injury was a substantial factor in bringing about the additional claimed diagnoses or condition? Provide your answer below by checking Yes or No for each additional claimed diagnosis or condition. Assign the most reasonable corresponding diagnosis codes for each additional claimed diagnosis/condition. **Attach additional pages, if necessary.**

| Additional claimed diagnosis or condition | Yes | No | Diagnosis code 1 | Diagnosis code 2 | Diagnosis code 3 | Diagnosis code 4 |
|---|---|---|---|---|---|---|
| 1) L4-5 Disc degeneration | ☐ | X | S33.5XXA | | | |
| 2) Disc desiccation @ L2-3 L3-4 | ☐ | X | S39.012A | | | |
| 3) L5-S1 disc / impingement at S1 | X | ☐ | M51.27 | | | |
| 4) | ☐ | ☐ | | | | |
| 5) | ☐ | ☐ | | | | |
| 6) NEW SECTION | ☐ | ☐ | | | | |
| **Additional compensable diagnoses or conditions found by the designated doctor** | | | Diagnosis code 1 | Diagnosis code 2 | Diagnosis code 3 | Diagnosis code 4 |
| 7) Left S1 radiculopathy. | | | M54.17 | | | |
| 8) | | | | | | |

# DD EOI Narrative – Define Terms

A **lumbar sprain/strain** is a collective “diagnosis” to explain common spinal soft tissue injuries.

As per the MDG, the event associated with the onset of back pain are *“low force (low violence) activities the person has done multiple times in the past without injury. Physicians have historically diagnosed back* "strain" *as if muscles were torn, or back* "sprain" *as if ligaments were torn, although MRI studies in the first 48 hours after pain onset in patients who experience the acute onset of back pain have not shown either strained muscles or sprained ligaments to be present (Modic)”.*

# DD EOI Narrative - Define

**Lumbar sprains / strains** *"have been used historically and are still used by many physicians along, with the associated ICD-10-CM code".*

The evidence-based medicine in the MDG demonstrates that *"the reason adults get episodes of low back pain is not scientifically established, and the exact structure in the back responsible for the pain cannot be determined"*, however, **these diagnoses are reasonable to explain the back pain event.**

# DD EOI Narrative - Define

- A low-grade lumbar sprain / strain is a reasonable diagnosis to explain the symptoms and complaints early in the claim.
- Other EBM may list such an episode as low back pain, mechanical back pain or back pain unspecified – and not necessarily an INJURY event.

# DD EOI Analysis - Define

A **disc herniation** is a change in the annular fibers of a disc that results in an outward deformation of the disc posteriorly, usually less than 180 degrees of the posterior disc if generalized or less than 90 degrees if it is focal.

Imaging findings of disc herniations are usually due to a slow degenerative process along with other changes of spondylosis.

# DD EOI Analysis - Define

**Disc herniation (continued).**

- If they uncommonly occur due to trauma, evidence-based medicine supports that these require super physiologic loads of axial compression and hyperflexion (and may involve twisting).
- Experimental studies have used finite element modeling to demonstrate that the bone is the most vulnerable structure in the spine and will often fail before the disc".

# DD EOI Analysis - Explain

The Designated Doctor explained,

*"The mechanism in this case was consistent with a MOI that had potential to result a traumatic herniation. While there was no evidence of endplate injury, the disc herniation was at a single level and the early complaints and exam findings were consistent with the location and side of the additional claimed injury on imaging.*

# DD EOI Analysis - Explain

*I am aware of the EBM that discusses that disc herniations can be present in MRIs of asymptomatic individuals, but in this case, the mechanism and specific complaints and findings are consistent with the focal* ***left L5-S1 disc herniation with impingement on the exiting left S1 nerve root.”***

# DD EOI Analysis - Define

**Radiculopathy** is pain that arises from a nerve root that results in a specific nerve root distribution of pain / abnormal sensation, (dermatome), with potential weakness (myotome), reflex changes and atrophy.

If due to trauma, rather than disease, there should be a corresponding anatomic lesion on imaging to cause nerve root compression or deflection.

# DD EOI Analysis - Explain

A **left S1 radiculopathy** is a specific side and nerve root level of involvement. The claimant complained of radicular symptoms within days of the injury event.

The clinical examination demonstrated neurologic findings consistent with an S1 radiculopathy that evolved proximal to distal within weeks of the injury event, consistent with the timeframe for a traumatic radiculopathy to develop.

A left S1 radiculopathy correlates with the lumbar MRI findings of L5-S1 disc herniation with impingement on exiting left S1 nerve root.

# DD EOI Analysis - Explain

Also explain why you DID NOT include

- ✓ L2-L3 and L3/L4 disc height loss and desiccation;
- ✓ L4-L5 mild disc degeneration;

Are these injury related?

Can they be aggravated?

# When Determining MMI

- Your determination of MMI **MUST** consider the injury / diagnoses / conditions **for EACH** certification.
- Then establish what the ODG or other EBM would recommend about the injury / diagnoses / conditions **for that** certification?
  - Example:  If a lumbar sprain / strain, don't recommend treatments that would only be appropriate for a clinical radiculopathy

# When Determining Impairment Rating

**EACH certification must:**

Rate the injury / diagnosis / condition you are considering based on the claimant's condition as of the date of MMI (**Rule 130.1**)

- Must find some information in the records or EBM that would allow you to render a medically probable IR that is consistent with the injury / diagnosis / condition you are considering.

# When Determine Impairment Rating

## Each certification must:

Rate the injury / diagnosis / condition you are considering based on the claimant's condition as of the date of MMI (**Rule 130.1**)

- If the condition is the "same" or similar between an earlier date of MMI and your exam, EXPLAIN that the condition was the same / similar and you will use your examination findings because they are more complete than those on MMI date.

# When Determining Impairment Rating

- **The IR must be consistent with the injury / diagnosis / condition you are considering.**

  - **Example:** Don't rate a lumbar sprain / strain as a DRE III (for spine fracture or ratable radiculopathy). A sprain strain should only ever be a DRE I or DRE II

  - **Example:** If the diagnosis is lumbar radiculopathy, then the IR could be a DRE I, DRE II or DRE III**, dependent on the differentiators present as of the chosen MMI date.**

# If a determination for a certification is NOT at MMI…

- If any of the certifications include any injury / diagnosis / condition where the claimant is not yet at MMI, then you cannot determine an impairment rating for that combination

- Address it by explaining that you cannot assign an impairment rating as the claimant is not at MMI for that injury / diagnosis / condition

# Questions About - POD ordered exams for MMI, IR and EOI with Multiple certifications?

# CASE 3

# Extent of Injury

## Case #3

- The injured employee is a 52-year-old female who was assigned a date of injury based of complaints of right-sided wrist pain and numbness and tingling in her hands (R > L),
- The symptoms have worsened over the last few months.
- She has worked for the same employer for 20 years
- She claimed that her symptoms were due to typing emails, filing papers bilaterally and operating an electric stapler with her right hand / wrist.

# Extent of Injury

## Case #3

- First visit to urgent care was 7 days after the date assigned.
- Her past medical history was pertinent for high cholesterol, hypertension.
- She was told in the past that she was “pre-diabetic” but did not know what her last HgA1c was.
- Does not recall what meds she was on.
- A call to her pharmacy confirmed her medications included irregular fills of rosuvastatin and amlodipine and one prior fill of metformin years ago but never picked up refills.
- Past surgical history was pertinent for C section x 2 and cholecystectomy.

# Extent of Injury

## Case #3

- Her vitals included a BMI or 38.5, BP of 152/94, pulse of 82.
- She reported that all fingers felt numb in bilateral hands, in a stocking-type fashion, palmar worse than dorsal.
- Her wrist ROM was uniformly restricted by 50 % bilaterally, due to “pain”
- There was no obvious tenosynovitis of the dorsal or palmar wrist tendons
- There was some generalized edema in the hands

# Extent of Injury

## Case #3

- She was started in ODG recommended PT for *"wrist sprain / strain".*
- After 6 sessions, there was no improvement in ROM of the wrists, continued pain inhibition and increased complaints.
- The PT reported that:
    - The right hand had pain more concentrated at the ulnar wrist; however, there was no specificity to an anatomic structure
    - There was continued N/T in all 5 digits bilaterally
- This was reported to the treating doctor at the same facility and the treating doctor ordered an MRI of the right wrist

# Extent of Injury

**Case #3 -** The **1.5 T MRI of the wrist** demonstrated

- The median nerve was of normal caliber with no interstitial edema.
- The dorsal and volar tendons of the wrist, including the Extensor Carpi ulnaris (ECU) were of normal caliber and without evidence of edema or “tears”.. but some tendinosis of the ECU tendon and extensor carpi radialis longus (ECRL) /extensor carpi radialis brevis (ECRB) tendons.
- No obvious injury to the UCL or other ulnocarpal ligaments
- Mild effusion in the ulnar side of the wrist

# Extent of Injury

**Case #3 -** The **1.5 T MRI of the right wrist** demonstrated:

- TFC **wear** with some thinning and fraying, mucoid degeneration within the TFC and TFC perforation
- Mild lunate, triquetral and distal ulnar chondromalacia.
- Mild subchondral bone marrow edema and cystic changes at the junction of the lunate and triquetrum
- No ulnar styloid fracture or UCL injury
- No injury of the ligaments of the TFC, nor involving ulnotriquetral and ulnolunate ligaments.

# Extent of Injury

## Case #3

- Due to the TFCC “tear” and the ongoing N/T in the hands, she was referred to an orthopedic surgeon.
- The orthopedic surgeon documented:
  - Numbness and tingling in the radial digits > ulnar digits bilaterally, but not specific to a dermatome or peripheral nerve distribution.
  - Phalen’s and Tinel’s were reported as “positive” bilaterally
  - Non-specific pain was reported at the right ulnar wrist
  - No provocative maneuvers of the right wrist joint were performed.

[Unable to correlate if the imaging findings were significant.]

# Extent of Injury

## Case #3

- The orthopedic surgeon diagnosed:
  - Carpal Tunnel Syndrome (CTS)
  - TFCC “tear”
- The surgeon recommended
  - A referral for an EMG / NCS (EDX) of bilateral upper limbs.
  - A carpal tunnel release and wrist arthroscopy to repair the TFCC “tear”.

# Extent of Injury

**Case #3**

- The Carrier had a Peer review completed.
- The Peer Review doctor gave evidence-based medicine to dispute that ANY of the MRI findings were due to the assigned DOI. #
- At this point, the carrier requested a Designated Doctor examination to define the extent of the compensable injury.

*# the EBM will be presented later in the case*

# Extent of Injury

## Case #3

PM&R performed an EMG / NCS (EDX) of bilateral upper limbs.

- There was no medical history other than *"bilateral upper extremity numbness and tingling".*
- There was no physical examination conducted.
- The EMG portion of the exam tested ONLY 4 proximal muscles of C5, C6 and C7 distribution:
  - There were no abnormal motor unit potentials or abnormal spontaneous potentials. [Would indicate axonal injury to a nerve root or peripheral nerve.]
  - There was diffuse *"insertional activity".* [Non-specific and non-diagnostic.]

# Extent of Injury

**Case #3**

NCS of bilateral upper limbs.

- Moderately prolonged latency and reduced amplitude of the median sensory potentials.

  [While not commented by the MD, the tabular data revealed the radial and ulnar sensory potentials **also** had prolonged latency and amplitude.]

- Mildly prolonged median motor onset latency, with borderline motor conduction velocity in the forearm.

  [While not commented by the MD, the tabular data revealed the ulnar motor potential **also** had prolonged latency, amplitude and there was borderline conduction velocity  across the elbow segment.]

# Extent of Injury

**Case #3**

The PM&R MD concluded there was:

- A *"likely C5 / C6 / C7 radiculitis".*
- *"Moderate to severe bilateral upper extremity median neuropathy".*
- There was no clinical correlation of the data.

# Extent of Injury

## Case #3 - Electrodiagnosis

- ✓Like with MRI imaging, as a DD, avoid reporting on only the conclusions. The details in the body of the report (the tables and waveforms) provide MUCH information that may be relevant.
- ✓This case reported erroneous conclusions based on the tabular data.
- ✓Be familiar with how to "read" the EDX tables, as the skill and motivations of the performing examiner can vary.
- ✓The most appropriate diagnosis for the collection of findings on the EMG / NCS was:

**A generalized moderate sensory and mild motor peripheral neuropathy.**

# Extent of Injury

**Case #3**

- On return to the Urgent Care Center after the EMG / NCS and 3 months after the assigned DOI, the doctor documented:
  - IE complaints of bilateral numbness tingling and pain that extended up to her elbows, but worse in the hands
  - Bilateral medial elbow pain and neck stiffness and soreness
- Exam revealed:
  - vitals of BMI or 39.2, BP of 175/101, pulse of 99.
  - ROM of bilateral wrists had declined in ALL directions
  - There was bilateral dorsal forearm pain diffusely and bilateral medial elbow pain
- Diagnoses were the same (Carpal tunnel syndrome and right TFCC tear) and added, apparently based on the EDX exam:
  - Bilateral Medial epicondylitis
  - Bilateral Cervical radiculopathy

# Extent of Injury

**Case #3 – DWC 32**

- **The purpose of the exam was EOI**
- **The Box 32C diagnoses were**
  - Carpal tunnel syndrome
  - Right TFCC tear
  - Mild tendinosis of the ECU tendon and extensor carpi radialis longus (ECRL) /extensor carpi radialis brevis (ECRB) tendons.
  - Mild lunate, triquetral and distal ulnar chondromalacia.
  - Mild subchondral bone marrow edema and cystic changes at the junction of the lunate and triquetrum
  - Bilateral Medial epicondylitis
  - Bilateral Cervical radiculopathy

# Extent of Injury - Case #3
# DWC-32 V. Purpose for Examination

| | |
|---|---|
| X | **C. Extent of injury** List all injuries (diagnoses, body parts or conditions) in question, claimed to be caused by, or naturally resulting from the accident or incident **and** describe the accident or incident that caused the claimed injury. The designated doctor will answer whether they were a substantial factor in bringing about the additional claimed injuries or conditions, and without it, the additional injuries or conditions would have not occurred. |

**Carpal tunnel syndrome** **Right TFCC tear**
**Mild tendinosis of the ECU tendon and extensor carpi radialis longus (ECRL), extensor carpi radialis brevis (ECRB) tendons.**
**Mild lunate, triquetral and distal ulnar chondromalacia.**
**Mild subchondral bone marrow edema and cystic changes at the junction of the lunate and triquetrum**
**Bilateral Medial epicondylitis** **Bilateral Cervical radiculopathy**

# Extent of Injury

**Case #3 – DESIGNATED DOCTOR (DD) EXAMINATION**

- This occurred 4 months after the assigned DOI
- The DD reviewed the medical records and documented the pertinent positive and negative findings and their timeline to the assigned DOI.
- The MOI was described by the IE as follows:
  - *"I have worked for the same employer for over 20 years, doing repetitive work"*
  - Her job involved typing emails, interspersed with other office work, including operating an electric stapler with her right hand / wrist.
  - She has had an ergonomic work site, including a gel wrist pad for her keyboard and mouse for > 10 years.

# Extent of Injury

## Case #3 – DESIGNATED DOCTOR (DD) EXAMINATION

- Complaints on that date were
  - Numbness and tingling in her hands (R > L) for “years”, but worsened months before her assigned DOI
  - The N / T was worse in the digits, but felt it to the mid-forearms
  - Bilateral wrist pain R > L, on the ulnar side on the right and globally on the left
  - Bilateral medial elbow pain
  - Neck pain and stiffness
  - She felt sad and anxious

# Extent of Injury

## Case #3 – DESIGNATED DOCTOR (DD) EXAMINATION

- The DD confirmed the PMH of high cholesterol, hypertension and that her blood sugars had been abnormal for years, but she did not want to admit she was diabetic.
- Did not state that she was treated for depression, but med list included anti-depressants.
- Admitted to not being compliant with medications when questions.
- She also admitted having carpal tunnel symptoms during her pregnancies, but *"these symptoms are MUCH WORSE".*
- She admitted to not being active since her children were born over a decade ago.

# Extent of Injury

**Case #3 – DESIGNATED DOCTOR (DD) EXAMINATION**

- She was endomorphic with centripetal obesity. BMI 40
- Vitals: BP 168/96, pulse 98 and RR 20 the after short walk to the exam room.
- She reported pain to light touch over much of her hands, and dorsal / volar forearms
- There was more focal pain medially, but still non-specific to an anatomic structure at her medial elbows
- She was tender over all areas of her wrists, with non-specific focality to the ulnar wrist bilaterally

# Extent of Injury

## Case #3 – DESIGNATED DOCTOR (DD) EXAMINATION

- She reported pain in her wrists with Phalen's Maneuver, Reverse Phalen's Maneuver, and Pseudo- Phalen's Maneuver. [Conducted with the wrist in neutral position and flexion of the MCP joints – so NO compression of median nerve.]
- Tinel's maneuver was locally tender at the wrist, but also at various points in the volar and dorsal forearms. [This is NOT a positive Tinel's.]
- Direct Median Nerve Compression at the carpal canal while distracted was negative for median nerve distribution paresthesia's.
- Direct Ulnar Nerve Compression at the cubital tunnel while distracted was negative for ulnar nerve distribution paresthesia's.

# Extent of Injury

## Case #3 – DESIGNATED DOCTOR (DD) EXAMINATION

- Reflexes were hyporeflexic, bilaterally symmetric at the bicep, brachioradialis, pronator teres and triceps.
- She complained of pain with reflex testing.
- Sensation was subjectively decreased in a gradient fashion, (worse distally) in the median, ulnar and radial distribution, worse in digits I and II.
- No OBJECTIVE dermatomal sensory loss
- Strength was give-way in the hand intrinsics, wrist flexors and extensor and shoulder abductors,

# Extent of Injury

**Case #3 – DESIGNATED DOCTOR (DD) EXAMINATION**

- Unusually, she complained of patchy sensory loss (CN V) over the face and around her mouth, but cranial nerve exam was otherwise normal. *
- Muscle tone was normal
- There was a negative Hoffman's, although she reported this caused an electrical shock to go from each hand to the ipsilateral shoulder.
- There was no clonus.
- Lhermitte's sign was negative

# Extent of Injury

- All wrist and elbow ROMs were decreased in a symmetric fashion bilateral.
- Passive ROM of the wrists and elbows were normal without significant mechanical symptoms or crepitation.
- The ulnar nerve at the elbow intermittently subluxed during PROM, of the elbow bilaterally.
- TFCC Compression Test was positive for pain globally in the wrists bilaterally. [Inconsistent for what the test, tests.]
- DeQuervain's test was negative for 2nd dorsal compartment pain but produced pain at the volar base of the thumbs. [Inconsistent for what the test, tests.]
- During manual muscle testing of the wrist flexors, there was no report of medial elbow pain.

# Extent of Injury

After your review of:

- The Medical Records
- Your Certifying Examination
- Your knowledge of:
  - Anatomy of the region
  - Associated diagnostics of the region
  - Evidenced based medicine of the region

**WHAT IS YOUR OPINION OF THE COMPENSABLE INJURY?**

# Extent of Injury – Case #3

## Compensable injury

1. Wrist Sprain ?
2. Wrist strain ?
3. Median Neuropathy ?
4. Carpal Tunnel Syndrome ?
5. TFCC tear ?
6. Mild tendinosis of the ECU, ECRL and ECRB tendons?
7. Mild lunate, triquetral and distal ulnar chondromalacia?
8. Mild subchondral bone marrow edema and cystic changes at the junction of the lunate and triquetrum?
9. Bilateral Medial epicondylitis?
10. Bilateral Cervical radiculopathy?

# Extent of Injury

## Compensable injury

**Without getting into the extensive EBM on "repetitive strain" injuries, IF there was an injury that happened,**

- ✓What is the lowest hanging fruit?
- ✓Do any of the other diagnoses based on complaints (especially later) make sense?
- ✓Do any of the other diagnoses based on imaging or diagnostics make sense?

# Extent of Injury

- **LET's REVIEW the ANATOMY and EBM RELATED TO *SOME* OF THE POTENTIAL COMPENSABLE INJURIES.**

- Median Neuropathy / Carpal Tunnel Syndrome
- TFCC Traumatic and Degenerative changes

*These diagnoses will not be uncommon in EOI examinations*

# Extent of Injury – Median Neuropathy / CTS

- CTS is a collection of symptoms or clinical findings that can occur as a result of compression of the median nerve within the carpal canal at the level of the wrist.
- CTS **most often** presents with an insidious or gradual onset.
- It ***can*** be caused by trauma, such as due to a
  - distal radius fracture
  - other acute wrist injuries due to a FOOSH

# Extent of Injury – Median Neuropathy / CTS

- CTS is most often bilateral and almost always more prominent in the dominant hand.
- The syndrome is characterized by pain, paresthesia, and weakness in the median nerve distribution of the hand. [SEE LATER SLIDE]
- CTS symptoms may be worse at night with nocturnal paresthesias (due to sleep positions) or provoked by activities that promote wrist flexion > wrist extension or gripping.
- Although these may be work activities, they are also common with typical ADLs (driving common)

# Extent of Injury – Median Neuropathy / CTS

**When the median nerve is clinically symptomatic, it may be called Carpal Tunnel Syndrome (CTS).**

- In early or mild CTS, the median nerve has no anatomic changes and possibly ***no electrophysiologic changes,*** and neurologic symptoms are intermittent.
- Prolonged or chronic pressure on the median nerve results in segmental demyelination and the symptoms may slowly progress to be more constant.

# Extent of Injury – Median Neuropathy / CTS

**When the median nerve is clinically symptomatic, it may be called Carpal Tunnel Syndrome (CTS).** (continued)

- The focal area of demyelination causes a short segment conduction block across the site of entrapment at the carpal tunnel.
- In more severe and prolonged chronic situations, Wallerian degeneration occurs with slowed conduction proximal to the wrist and denervation of the thenar (thumb) muscles occurs.

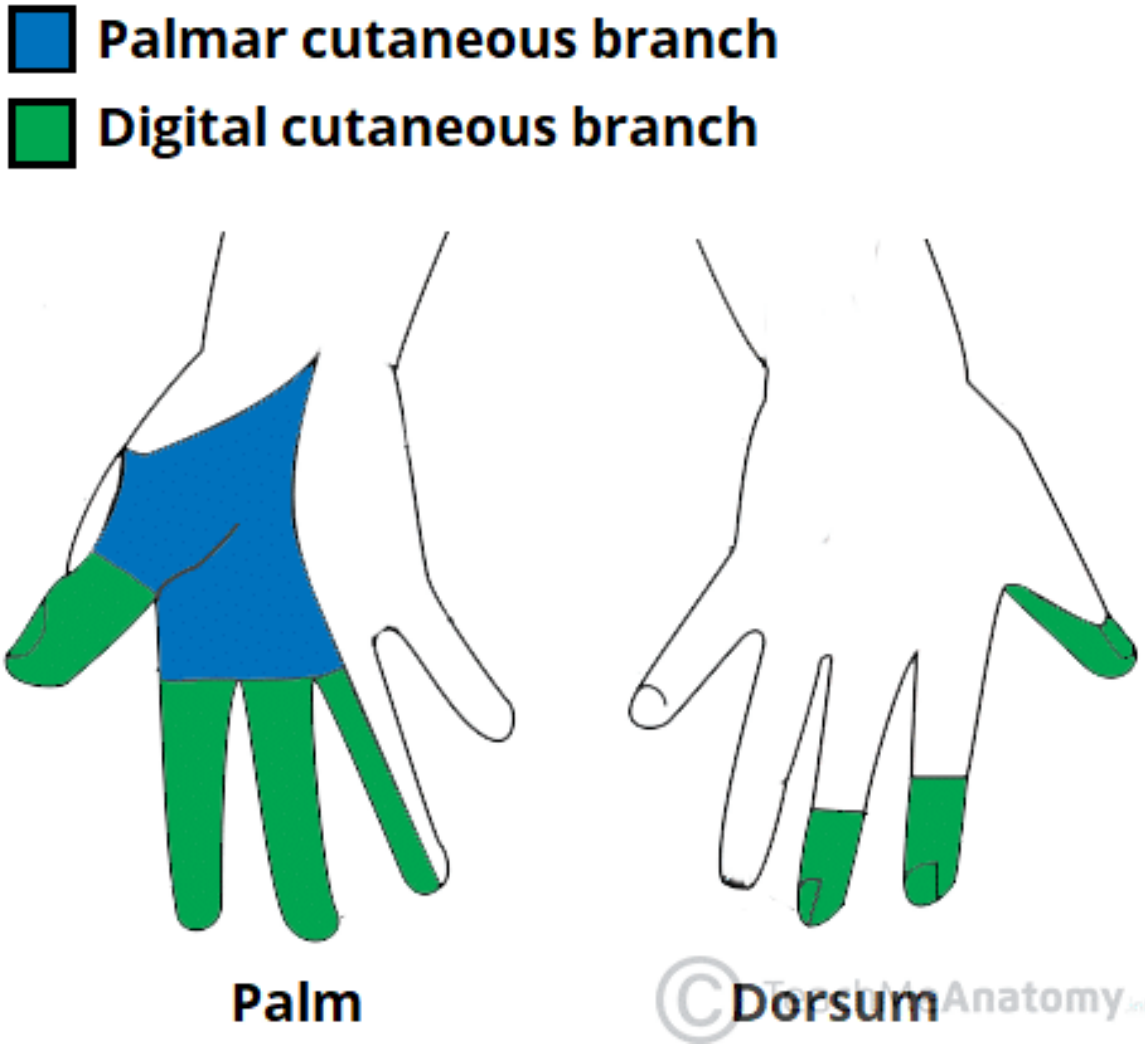
# Extent of Injury

## Median Nerve Distribution of Sensory Abnormalities

- Digital I, II, III and radial IV
- Palmar Cutaneous

*Note no significant abnormalities on the dorsum of the hand past the wrist on the palmar aspect, IF due to CTS*

FIGURE 1

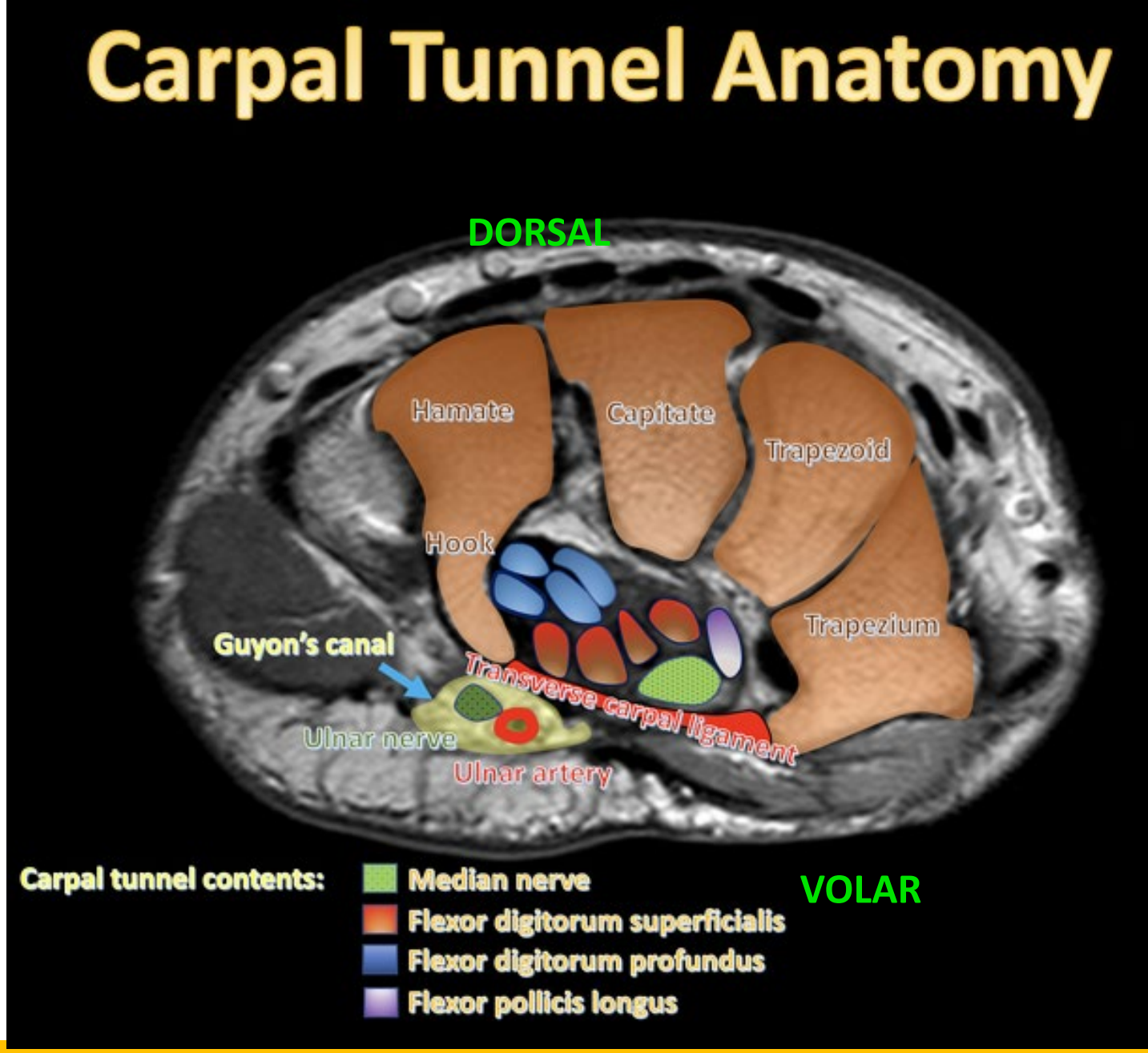


# EOI – Median Neuropathy

Schematic Cross-Sectional Image

Ulnar side on L
Radial side on R

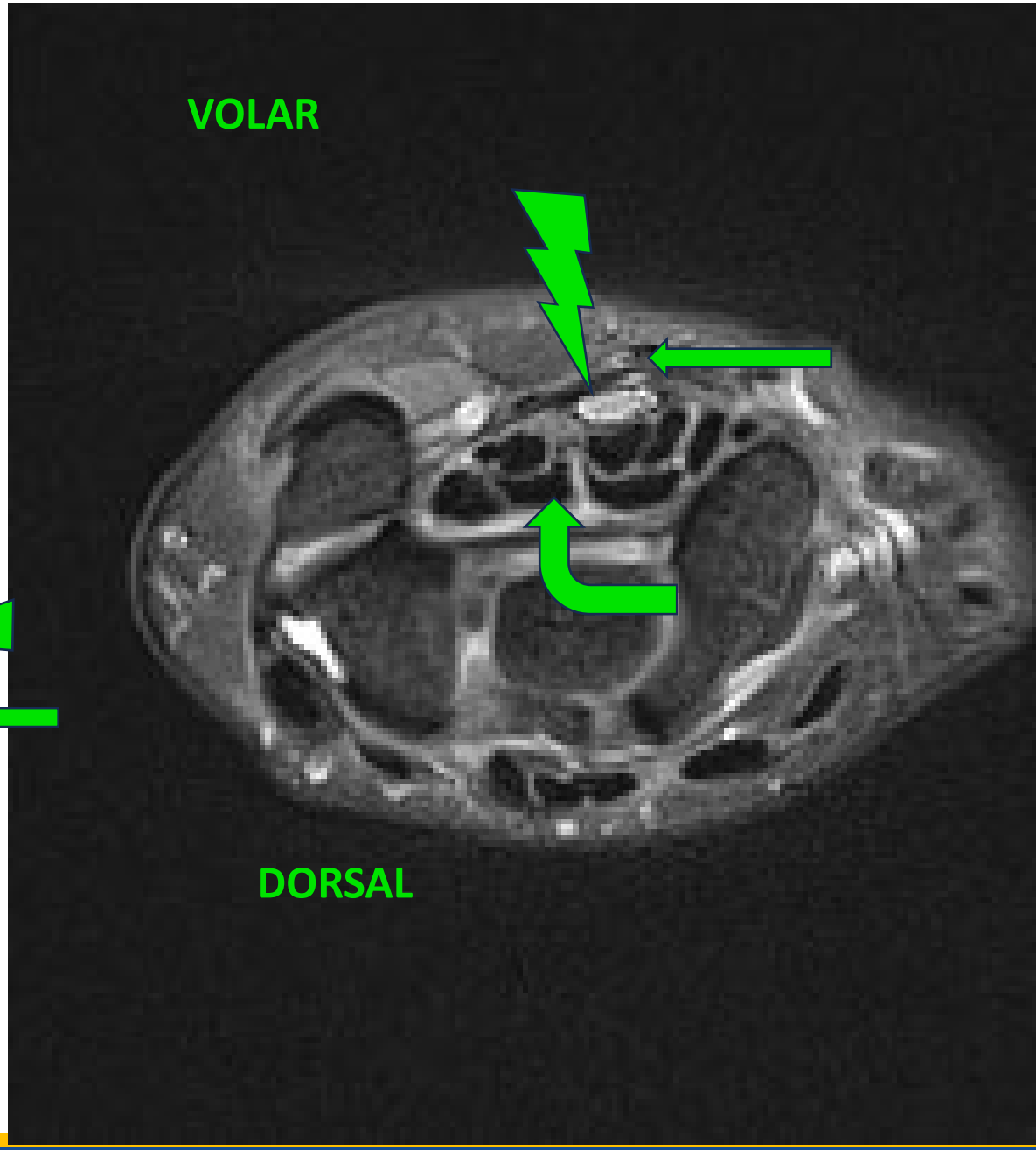
**Red, Blue and Purple Ovals are tendons.**
**Green is the Median nerve.**



# EOI – Median Neuropathy

Cross-Sectional Image
MRI of the wrist
NOTE:

- ✓ Hyperintense (bright) & enlarged Median Nerve
- ✓ **Below** the DARK transcarpal ligament
- ✓ **Above** the dark volar tendons in the carpal canal



# Extent of Injury – Median Neuropathy / CTS

**CARPAL TUNNEL SYNDROME:** As per the ODG,

- *"There is a broad range of sensitivity in the various tests for carpal tunnel syndrome, depending on the patient population.*
- *Clinicians should depend on more than one test.*
- *The most sensitive screening methods seem to be*

  *1) an abnormal Katz hand diagram,*

  *2) abnormal sensibility by Semmes-Weinstein testing,*

  *3) a positive Compression test (such as the Durkan's test),*

  *4) night pain"*

  [1, 2, and 3 should be in a distribution consistent with the anatomic schematic slide.]

# Extent of Injury - Median Neuropathy / CTS

The EBM in the ODG related to CTS indicates,

- ***"Determination of causation typically involves mechanism of injury, temporal relationship, and dose effect".***
- *"CTS seems to be **primarily attributable to CTS-prone personal characteristics** (e.g., obesity, diabetes, female, pregnancy), but symptoms **may be partially** associated with workplace activities".* [Melhorn et al and Lozano-Calderon et al.].
- As per the EBM in the ODG, *"there is some evidence concluding that CTS symptoms **can be** associated with workplace activities, but most studies **could not prove a causal relationship".*** [Nathan et al.]

# Extent of Injury - Median Neuropathy / CTS

It was also reported by Nathan, Istvan et al. that ***"Risk for carpal tunnel syndrome is closely related to general physical condition".*** [Nathan, Istvan et al 2005.]

- Findings from their study indicated "*Our findings confirm that healthy people are less likely to develop median nerve conduction abnormalities at the carpal tunnel than are unhealthy people"*
- *"Being overweight, older, and physically inactive are major risk factors for slowing and clinical CTS"*

# Extent of Injury - Median Neuropathy / CTS

[Nathan, Istvan et al 2005.] Continued…

**Consider this information as well**

- *"Workers' compensation patients with CTS, as a group, are identifiable by being overweight and physically inactive".*
- *"**Individual factors**, such as body mass index, age, wrist dimensions, and physical activity, are far more important for determining who develops clinical CTS **than are job-related factors,** such as specific job, force or repetitions, duration of employment, or industry".*

# With the EBM in mind and the facts of this case:

**Extent of Injury**

**Median Neuropathy**

**CTS**

- Was there a significant mechanism of injury, temporal relationship, and dose effect of this IE's job duties compared to the usual population that would indicate her work duties were medically probable to be substantial factor in causing CTS, IF that is the correct diagnosis?.
- Are there significant intrinsic or medical factors that would be medically probable to be the cause of CTS, IF that is the correct diagnosis?
- Are there complaints or physical examination findings that give you concern about potential non-injury related factors?
- How much weight would you give the EMG / NCS? Do the results appear biased?

# Extent of Injury – Case #3

**What else should we consider?**

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

- The **TFCC is** a load-bearing structure on the ulnar aspect of the wrist joint between the ulna, and proximal carpal row bones the lunate and triquetrum.
  - Acts as cushion for the ulnar head and lunate during the axial loading and ulnar deviation of the wrist
  - It is a pivot point for rotation of the forearm
- Is formed by multiple ligaments, fibrocartilaginous components, and a tendon – COMPLEX anatomy
- Functions to stabilize the ulnar aspect of the wrist

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## Triangular Fibrocartilage Disc

- Is comprised of fibrocartilage
- Elongated triangular shape
- Attaches to
  - to the articular (hyaline) cartilage on the ulnar aspect of the distal radius
  - 2 ligaments to the ulnar styloid (stronger attachment)
- Blood vessels are only on the peripheral aspect (ulnar) aspect of the joint, but the TFC is otherwise avascular.

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC ligaments

- **Triangular ligament of the TFCC**
- **Radioulnar ligaments:**
  - Volar radioulnar ligament (vRUL)
  - Dorsal radioulnar ligament (dRUL)
- Ul**nocarpal ligaments:**
  - Ulnotriquetral ligament
  - Ulnolunate ligament
  - Ulnocapitate ligament
- **Ulnar collateral ligament (UCL)**

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

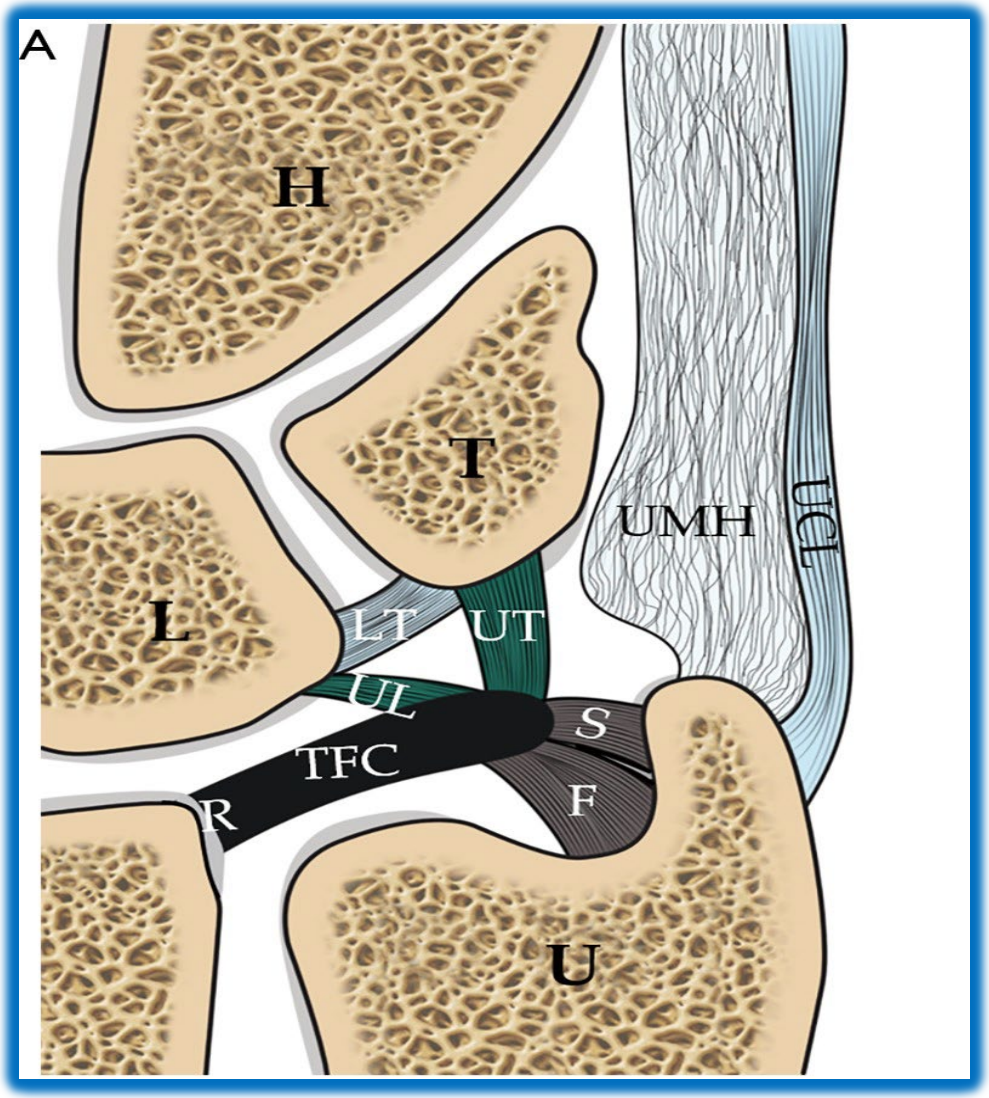
## Other TFCC structures

- **Extensor carpi ulnaris tendon and tendon sub sheath**
  - passes through the 6th extensor compartment of the wrist
  - At the level of the ulna, it is covered by a sub sheath, and the extensor retinaculum
- **Ulno Meniscal homologue (UMH)**
  - composed of loose connective tissue
  - Located between the ulnar styloid process and the triquetrum
  - Attached to the ulnar joint capsule and merges with the UCL and sheath of the ECU tendon

# Extent of Injury – TFCC

**A= Coronal Section of the Ulnar side of the wrist, demonstrating**

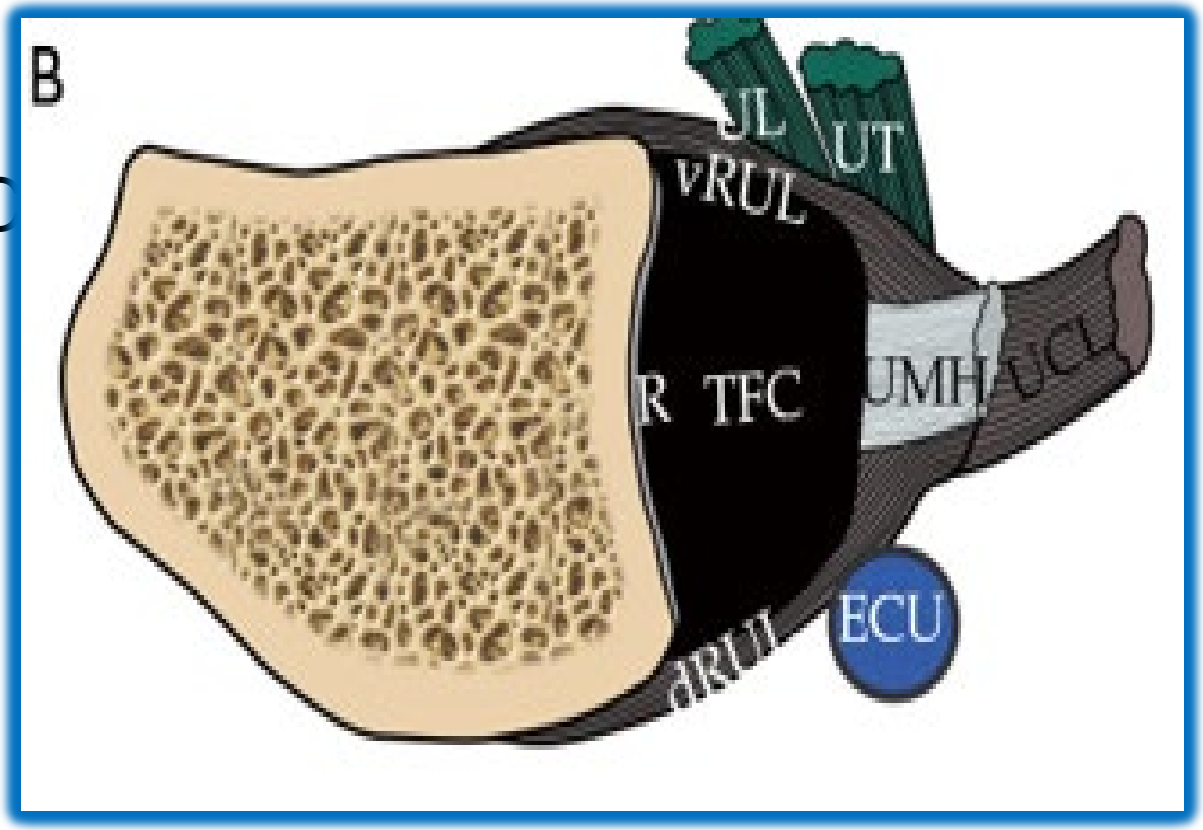
- ✓ The radius, ulna lunate and capitate bone
- ✓The UMH and TFC
- ✓The stabilizing ligaments
  - UL, LT, UT
  - UCL
  - Radial and ulnar attachments of TFC



# Extent of Injury

**B= Axial Section of the Ulnar side of the wrist demonstrates**

- ✓The radius,
- ✓The UMH and TFC
- ✓The ECU tendon
- ✓The stabilizing ligaments
  - UL, LT, UCL



# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC: "Tear" vs degeneration

- The frequency of abnormal MRI findings including degeneration increased with age.
- Similar to other joints with fibrocartilage, mucoid degeneration (MD) occurs to the fibrocartilage and the ECU tendon that are degenerative
- Changes to the TFC: Thinning, Internal delamination, Perforation
- Degenerative changes are more frequent and more intense on the ulnar surface, and they are always situated in the central part of the disc.

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC: "Tear" vs degeneration

- Degenerative change starts around the third decade and progressively increases in frequency and severity over subsequent decades.
- **Consider the EBM as it relates to these changes.**
  - Mikić ZD. **Age changes in the triangular fibrocartilage of the wrist joint.** J Anat. 1978 Jun;126(Pt 2):367-84. PMID: 670069; PMCID: PMC1235694.

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC: "Tear" vs degeneration

- **MRI findings of a degenerative TFCC**
  - Increased signal intensity within the TFC tissue,
  - Possible fraying at the edges, often without a clear full-thickness tear,
  - **Disc perforation is degenerative and age-related:**
    - ✓in the fifth decade 40.0%
    - ✓In the sixth decade 42.8%
    - ✓Over sixty 53.1%.

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC: "Tear" vs degeneration

- Chronic TFCC "tear" can result in premature degeneration of the Ulnocarpal joint (UCJ) or the Distal RadioUlnar Joint (DRUJ) with"
  - **subchondral bone marrow edema (SBME)** in the carpal bones, and the ulnar styloid process
  - osteophytosis,
  - cartilage loss,
  - subchondral sclerosis,
  - cystic changes.

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC Class 1 - Traumatic injury (Palmer criteria)

- **Traumatic lesions are classified according to their location.**

a. central perforation of the TFC disc proper

b. ulnar avulsion with or without distal ulnar fracture
   - may involve the proximal or distal lamina (foveal and styloid attachment, respectively), or both

c. distal avulsion of the TFCC involving ulnotriquetral and ulnolunate ligaments

d. radial avulsion of the TFC disc proper +/- sigmoid notch fracture

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC Class 1 - Traumatic injury

- Other injury patterns that could be associated with an acute / traumatic TFCC injury are:
  - Acute ulnar styloid avulsion fracture
  - Acute distal radial sigmoid notch fracture
  - Dorsal and volar distal radioulnar ligament injury
  - Lunotriquetral and ulnolunate ligament injuries
  - Ulnar collateral ligament injury

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## TFCC Class 2 - Degenerative Injury (ulnocarpal abutment syndrome)

Degenerative lesions are classified by the location and severity of degenerative changes of the triangular fibrocartilage complex, ulnar head, ulnocarpal bones and lunotriquetral ligament.

a. TFCC wear with thinning/fraying without perforation

b. TFCC wear in 2a with lunate, triquetral and/or ulnar chondromalacia

c. TFCC perforation +/- 2b chondromalacia

d. lunotriquetral ligament perforation +/ features of 2a, 2b and/or 2c

e. any or all of the above with ulnocarpal arthritis

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## IMAGING of the TFCC

*"Good quality MR imaging acquisition is a pre-requisite as it allows careful interpretation of the TFCC by a radiologist familiar with the normal MR anatomy of the TFCC as well as the likely injuries that can occur".*

*"In most instances, a standard high-resolution MR examination will suffice, though in particular clinical settings, such as in professional athletes, MR arthrography and traction will help to maximize accuracy in those situations where doubt still exists after standard MR imaging".* [Ng et al 2017.]

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## IMAGING of the TFCC

- Changes to the TFCC are also noted even in the very young asymptomatic population. [Fredrickson 2009.]

- MRI findings, whether normal variation or asymptomatic abnormality, can be observed in TFC and TFCC-related features of asymptomatic adolescents. [van der Post et al 2021.]

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## IMAGING of the TFCC

- A prospective study by Couzens et al of volunteers with no previous wrist injury or symptoms underwent bilateral MRI wrist studies.
  - They found *"positive MRI findings are common and may be coincidental in patients with wrist pain. MRI findings need to be correlated closely with clinical examination and history".*
- Common MRI findings included triangular fibrocartilage complex tears, intercarpal ligament tears and carpal bone osteonecrosis. [Couzens et al 2014.]

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## IMAGING of the TFCC

- *"The prevalence of incidental triangular fibrocartilage complex (TFCC) findings in MRI scans of asymptomatic subjects is high. The presence of an abnormal TFCC on MRI may be of questionable clinical meaning because there is a high incidence of TFCC abnormalities in asymptomatic subjects, particularly those over the age of 50.* ***Imaging results must be viewed in the context of the clinical history and physical examination".*** [Iordache et al 2012.]

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## IMAGING of the TFCC

- Portnoff et al 2024, concluded, *"TFCC abnormalities are present in patients of all ages, symptomatology and levels of involvement in high-impact sports. Although, there are differences in tear and abnormality prevalence when comparing these three factors, the difference was not significant".*
- ***"Given these findings, using MRI to assess ulnar-sided wrist pain should be fortified with clinical suspicion, physical exam, and physician judgment"**.*

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## IMAGING of the TFCC

- Lastly, the systemic review and pooled analysis by Chan et al (2014) also demonstrated that TFCC *"abnormalities are common in symptomatic and asymptomatic wrists, and they are increasingly common with age.* ***As in all situations where abnormalities are so common that they may be incidental, we need:***
  - *a reliable accurate method for determining whether these abnormalities are the cause of symptoms; and*
  - *evidence that treatment of these abnormalities improves symptoms better than placebo".*

# Extent of Injury

## IMAGING of the WRIST – in general

- A recent study by Jaarsma EH, Ring D, Tonn MD, Brinkman N et al in 2026, investigated **Patients Older Than 40 Years with Work Claims for Unilateral Wrist Symptoms, with bilateral MRI.**
  - They frequently have age-related, degenerative, and often bilateral MRI findings rather than acute injuries.
  - These, like knee or shoulder claims, often show pre-existing or contralateral changes (e.g., triangular fibrocartilage complex), indicating that new symptoms might be misinterpreted as traumatic injuries.

# Extent of Injury

**IMAGING of the WRIST** = Jaarsma, Ring et al in 2026

- MRI abnormalities appeared in **97% of symptomatic wrists** and **91% of asymptomatic ones**, averaging **three findings per wrist**.
  - ✓Articular disc signal changes in 64% of wrists (bilateral in 85%)
  - ✓Extensor carpi ulnaris tendon abnormalities in 45% (bilateral in 72%).
- **Incidental Findings**: 95% of abnormalities didn't corelate with the symptoms' location.

# Extent of Injury

**IMAGING of the WRIST** = Jaarsma, Ring et al in 2026

- **Causation Breakdown**:
  - ✓55% attributed to idiopathic/senescent causes
  - ✓41% nonspecific (no clear pathophysiology)
  - ✓only 5% truly traumatic (e.g., fractures or contusions).
- **Key Association**: Only a trip-and-fall mechanism linked to abnormalities solely in the symptomatic wrist
  - ✓Odds ratio 8.7; 95% CI 1.02–74.00

# Extent of Injury - Triangular Fibrocartilage Complex (TFCC)

## IMAGING of the TFCC and WRIST in general

***WHAT ARE IMPLICATIONS of the EBM?***

- **As with imaging of ANY body region, to determine the RELEVANCE of imaging findings, you MUST consider the**
  - ✓ **MOI**
  - ✓ **Subjective complaints**
  - ✓ **Objective findings proximate to the DOI**
  - ✓ **Case specific details (age, BMI, comorbidities, etc.)**

# With the EBM in mind and the facts of this case:

**Extent of Injury**

**TFCC**

- Was there a significant mechanism of injury that would support with medical probability that her work duties were medically probable to be substantial factor in causing a TFCC tear, IF that is the correct diagnosis?.
- Would her age and the other associated "positive" findings on MRI give evidence that they were all degenerative ?
- Were there any acute findings on MRI that would give evidence that would indicate aggravation of pre-existing degenerative changes?
- Are there complaints or physical examination findings that give you concern about potential non-injury related factors?

# Extent of Injury – Case #3

**Based on the**

- ✓ **MOI (claimed repetitive strain)**
- ✓ **The timeline of subjective symptoms and objective complaints**
- ✓ **The diagnostic studies (imaging and EMG / NCS)**
- ✓ **EBM**

**The compensable injury would not be medically probable to include:**

**Median Neuropathy / CTS**

**TFCC tear**

# Extent of Injury – Case #3

**Is there ANY support with a degree of medical probability for including any of these additional diagnoses?**

- Imaging findings of the carpal bones?
  - Mild lunate, triquetral and distal ulnar chondromalacia (chondromalacia of carpals)
  - Mild subchondral bone marrow edema and cystic changes at the junction of the lunate and triquetrum
- Tendinosis of the ECU, ECRL and ECRB tendons?
- Bilateral Medial Epicondylitis?
- Bilateral cervical radiculopathy?

# Extent of Injury – Case #3

**Is there ANY support with a degree of medical probability for including any of these additional diagnoses?**

**DESCRIBE EACH of the terms:**

- ✓ **How they occur**
- ✓ **Degenerative condition or can they be acute / due to trauma?**
- ✓ **If they occurred due to trauma, what would you expect to see (clinical and imaging) and did you?**
- ✓ **Is there any support for aggravation IF pre-existing?**

# Extent of Injury – Case #3

**Is there ANY support with a degree of medical probability for including any of the additional diagnoses based on:**

- ✓ **The "repetitive strain" MOI?**
- ✓ **The vague and changing (additional areas of involvement) subjective complaints (SC)?**
- ✓ **Were there any consistent and corelating objective, clinical findings (CF)?**
- ✓ **Did the diagnostic testing correlate with the MOI / SC / CF ?**
- ✓ **Does your knowledge of the EBM related to CTS or TFCC imaging affect your opinions?**

# DWC Form 68 - DD Examination Data

**Part 3. Purpose of exam**

**15. Issues considered during designated doctor's exam.**

[X] **a) Extent of injury**

**List all items that were included on DWC Form-032 Part 5, Box 31C and any other additional diagnoses or conditions you found to be a part of the compensable injury.** Did you determine that the accident or incident giving rise to the compensable injury was a substantial factor in bringing about the additional claimed diagnoses or condition? Provide your answer below by checking Yes or No for each additional claimed diagnosis or condition. Assign the most reasonable corresponding diagnosis codes for each additional claimed diagnosis/condition. **Attach additional pages, if necessary.**

| Additional claimed diagnosis or condition | Yes | No | Diagnosis code 1 | Diagnosis code 2 | Diagnosis code 3 | Diagnosis code 4 |
|---|---|---|---|---|---|---|
| 1) Carpal tunnel syndrome, B | [ ] | [X] | G56.03 | | | |
| 2) Right TFCC tear | [ ] | [X] | S63.591A | | | |
| 3) Chondromalacia of carpals & subchondral BME | [ ] | [X] | M94.231 | | | |
| 4) Tendinosis right wrist tendons | [ ] | [X] | M65.843 | | | |
| 5) Medial epicondylitis, B | [ ] | [X] | M77.02 | | | |
| 6) **Cervical Radiculopathy, B** | [ ] | [X] | M54.02 | | | |
| **Additional compensable diagnoses or conditions found by the designated doctor** | | | Diagnosis code 1 | Diagnosis code 2 | Diagnosis code 3 | Diagnosis code 4 |
| 7) | | | | | | |

# QUESTIONS ABOUT CASE #3?

# QUESTIONS ABOUT EXTENT OF INJURY CASES??

# References

# MMI/IR/Extent Of Injury (MMI/IR/EOI)

All of the changes to the **§127.1-127.25 and §180.23** rules are effective 6/5/2023 and can be viewed at:

https://www.tdi.texas.gov//wc/rules/2023rules.html

# TFCC References:


Casadei K, Kiel J. **Triangular Fibrocartilage Complex.** [Updated 2022 Aug 22]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK537055/

Chan JJ, Teunis T, Ring D. **Prevalence of triangular fibrocartilage complex abnormalities regardless of symptoms rise with age: systematic review and pooled analysis.** Clin Orthop Relat Res. 2014;472(12):3987-94.

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# TFCC or Wrist References:


Couzens G, Daunt N, Crawford R, Ross M. **Positive magnetic resonance imaging findings in the asymptomatic wrist.** ANZ J Surg. 2014 Jul-Aug;84(7-8):528-32. doi: 10.1111/ans.12552. Epub 2014 Feb 26. PMID: 24612468.

Fredericson M, Ho C, Waite B, Jennings F, Peterson J, Williams C, Mathesonn GO. **Magnetic resonance imaging abnormalities in the shoulder and wrist joints of asymptomatic elite athletes.** PM R. 2009 Feb;1(2):107-16. doi: 10.1016/j.pmrj.2008.09.004. Epub 2009 Feb 3. PMID: 19627884.

Lisle DA, Shepherd GJ, Cowderoy GA, O'Connell PT. **MR imaging of traumatic and overuse injuries of the wrist and hand in athletes.** Magn Reson Imaging Clin N Am. 2009 Nov;17(4):639-54, vi. doi: 10.1016/j.mric.2009.06.007. PMID: 19887294.

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