

# Interventional Pain Techniques for the Primary Care Provider

Eric Royster, MD

# Interventional Pain Techniques for Primary Care

ERIC I. ROYSTER, MD  
ANESTHESIOLOGY/PAIN MEDICINE  
INTEGRATED PAIN AND NEUROSCIENCE  
SOUTHERN PAIN SOCIETY ANNUAL MEETING  
2022  
NEW ORLEANS, LA

---

---

---

---

---

---

---

---

## About Me



---

---

---

---

---

---

---

---

## Goals

Review of recent relevant literature and discussion

Assessment of the pain patient PE, Imaging, Initial Treatment.

An Overview of the Various Treatment Options in your office and mine

---

---

---

---

---

---

---

---

### What is Chronic Pain?

- ❑ Pain is chronic or persistent when we must accept that the painful condition is not reversible.
- ❑ Similar to other forms of chronic disease in it's impact on psychosocial function, etc.
- ❑ This is where "management" comes in, as in diabetes, management is crucial.

---

---

---

---

---

---

---

---

### How Prevalent is Chronic Pain

In the U.S.A.

- ❑ 40 million American suffer from chronic pain
- ❑ 22 million have conditions limiting basic everyday functions such as walking, lifting, carrying.
- ❑ 18 million Americans visit the doctor each year for back pain.
- ❑ Pain is the 1<sup>st</sup> or 2<sup>nd</sup> commonest complaint for visits.

---

---

---

---

---

---

---

---

### Barriers to Effective Treatment of Chronic Pain

- ❑ Pain is notoriously difficult to study, we have animal models but its always debatable how relevant those are.
- ❑ No lab values or other ways to objectively measure pain.
- ❑ Difficult to measure our successes, especially in attempts to rigorously study.

---

---

---

---

---

---

---

---

### BMC Primary Care Journal

---

Slatman et al 2022

Factors used by general practitioners for referring patients with chronic MSK pain: a qualitative study

- Interviewed 14 Dutch PCPs about referral patterns etc (COVID)
- Identified 28 factors mentioned by 50% of interviewed GP.
- Found that 90% of GPS interviewed mentioned unfamiliarity with treatment options as an influencing factor.

---

---

---

---

---

---

---

---

### BMC Primary Care Journal

---

Slatman et al 2022

Factors used by general practitioners for referring patients with chronic MSK pain: a qualitative study

- Other commonly mentioned factors showed a focus on location of pain as well as patient's acceptance of pain or lack thereof

---

---

---

---

---

---

---

---

### Pain Medicine Journal, 2018

---

□ Becker et al

□ Pain Management for Primary Care Providers: A Narrative Review of High-Pact Studies, 2014-2016

- Reviewed several "high-impact studies" relevant to PCPs and pain focusing on non-opioid treatment options.

---

---

---

---

---

---

---

---

Pharmacotherapy for acute lumbar pain

- Review of 2 studies questioned efficacy of cyclobenzaprine and oxycodone/ APAP when added to naproxen (5)
- Suggested oral steroids in the presence of acute sciatica led to modest improvement at 3 weeks (4)

---

---

---

---

---

---

---

---

Total Knee Replacement

- TKR was found to be more efficacious than nonsurgical management for pain and functional improvement for knee OA (Skou et al)
- TKR was associated with a higher risk of adverse events.

---

---

---

---

---

---

---

---

Medical Cannabinoids, etc

- Evidence for efficacy in chronic neuropathic pain (1)
  - Modest effect, adverse effects common
  - Low to moderate quality of evidence, significant risk of bias
- Meaningful improvement with meditation, mindfulness, CBT, etc. (9,10)

---

---

---

---

---

---

---

---

## Prevention

- 4 trials gave low-quality evidence of a short-term protective effect of exercise on incident low back pain (16)
- Exercise plus education reduced incident LBP at short and long-term follow-up but had no effect on prevention of LBP-related sick leave at short- or long-term follow-up (16)
- Increasing amounts of time per day spent in light-intensity physical activities were significantly associated with less incident disability and less disability progression, even after controlling for socioeconomic and clinical factors (17)
- One study demonstrated a dose- response relationship between increased steps and decreased disability (18)

---

---

---

---

---

---

---

---

## Interventional Pain Treatments

- Manchikanti et al. published a response to the Chou paper which contradicted his findings and reported significant efficacy (20)

---

---

---

---

---

---

---

---

## ESIs and spinal stenosis

---

---

---

---

---

---

---

---

### Primary Care and Pain

- ❑ What can you do for the acute, subacute, chronic pain patient?
  - Comfort, interest, experience, practice environment.
  
- ❑ What are reasonable initial treatment options you can provide?
  - Workup, referral, medication, interventions, insurance, etc.
  
- ❑ When are good times to make a referral to a specialist?
  - Comfort, interest, experience, practice environment.

---

---

---

---

---

---

---

---

### Primary Care and Pain

- ❑ Weight Loss
- ❑ Encourage exercise
  - ❑ Core Strength and flexibility
- ❑ Education
  - ❑ Posture, workplace, proper mechanics

---

---

---

---

---

---

---

---

### Imaging

- ❑ Plain films
  - ❑ Rule of VCF, instability, general structure in the spine
  - ❑ Rule out fracture, displacement in hips, shoulder, etc.
  - ❑ Tip: when in doubt A/P and lateral views will usually get started.
  - ❑ In many cases MR imaging will not be approved by insurance until performed.

---

---

---

---

---

---

---

---

### Imaging

- ❑ MRI- Gold standard for assessment of painful spinal conditions
- ❑ While there are indications for use of contrast, not typically required.
- ❑ Even if an MRI is unlikely to affect treatment (e.g. facet disease), occult findings are not uncommon.

---

---

---

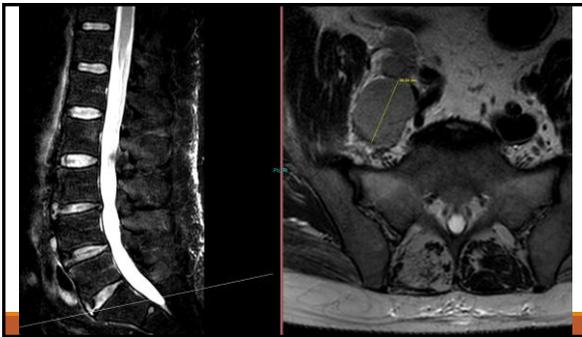
---

---

---

---

---



---

---

---

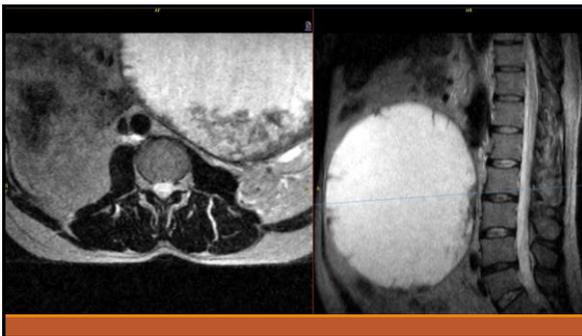
---

---

---

---

---



---

---

---

---

---

---

---

---

### Spine General Considerations



- ❑ MRIs don't always correlate with clinical findings.
- ❑ MRI is a part of the puzzle
- ❑ The dominant lesion on MRI is often not the dominant pain generator.
  - E.g. severe spinal stenosis but the pain generator is facet syndrome.

---

---

---

---

---

---

---

---

### The Physical Exam

❑ *"I used to think that the brain was the most fascinating thing in the whole universe... Then I thought, what's telling me that?"*

Emo Phillips

- ❑ This is not a full neurologic exam, I'm looking for clues to the source of the pain, and I am looking for obvious neurologic involvement, clear red flags.

---

---

---

---

---

---

---

---

### Fortin's finger test:

- ❑ The patient can indicate location of the pain with 1 finger infero-medially to the posterior superior iliac spine...

---

---

---

---

---

---

---

---

### A few landmarks

- C7 spinous process
- T7 spinous process- inferior scapular border
- L2 level- end of spinal cord in adult
- L4/5 spine- superior aspect of iliac crest
- Ask the patient to point to the area of chief complaint as specifically as possible, e.g. with one finger. *This is the most important landmark. Note the spinal level*

---

---

---

---

---

---

---

---

### Inspection

- Gait: Antalgic or Normal, assist device? Steady or not?
- Overall: Habitus, Dress, Hygiene, Skin, Distress
- Mental, psychological state
- Scoliosis, station, respiration, communication

---

---

---

---

---

---

---

---

### Cervical and Lumbar Exam Pearls

Pain with extension → Posterior elements

Pain with flexion → Anterior elements

- Pain with left or right rotation
- May indicate most affected side
  - Spondylosis, typically ipsilateral
  - Myofascial, typically contralateral

---

---

---

---

---

---

---

---

## Pearls

---

- Note spinal level correlate(s)
- Cervical
  - Paraspinal pain often indicates facetogenic pain
  - Pain in the midline, often base the neck often indicates epidural inflammation or discogenic pain
- Thoracic
  - In the absence of trauma or VCF, thoracic pain is most often cause by spasm of the paraspinal musculature due to underlying lumbar and/or cervical disease.

---

---

---

---

---

---

---

---

## Pearls

---

- Lumbar
  - Lower disc pain, especially L4/5 and L5/S1
    - Often radiates and will be described as hip pain
    - Often mimics GT bursitis
    - May radiate to the groin, inguinal area.
  - Lower lumbar facet pain
    - Lumbar facets about 2.5 cm off midline.
    - May radiate into the legs. Most commonly posterior hips to the knees
    - Will occasionally radiate even to the feet and suggest radiculopathy

---

---

---

---

---

---

---

---

## Pearls

---

- Lumbar radiculopathy, active annular tears
  - In the acute or subacute phase, the patient, even used to chronic pain, will be miserable
  - These patients are invariably tender in sciatic notch(es).
  - This may mimic SI joint pain and is often confused.
  - May often confused with piriformis syndrome.

---

---

---

---

---

---

---

---

### Vertebral Compression Fracture

- ❑ Spinal Percussion (worst area last because you may be done after that)
- ❑ They do not all hurt, acutely or chronically.
- ❑ Do not perform unnecessary maneuvers.

---

---

---

---

---

---

---

---

### Back Exam

- ❑ Straight Leg Raising Test (Lasegue's)
  - ❑ Raise knee straight until pain is felt
  - ❑ Note angle, usually 10-60 degrees.
  - ❑ Elicits pain at segmental site of spinal lesion
- ❑ Typically:
  - ❑ Central spine/disc lesion: mid-line pain
  - ❑ Lateral spine/disc lesion: ipsilateral LE
  - ❑ Intermediate spine/disc lesion: both

---

---

---

---

---

---

---

---

### Sacroiliac Joint

- ❑ Fortin's Finger
- ❑ Testing for SI joint pain- stick a needle in it.
- ❑ Difficult to assess in presence of radiculopathy
- ❑ Not as common as reported, in my opinion. There are risk factors.
- ❑ None are very predictive:
  - ❑ Compression Test, Patrick's Test, etc.

---

---

---

---

---

---

---

---

### Neurological Exam

---

- Looking for obvious deficits
- Looking for meaningful asymmetry.
- The patient will often tell you where you might focus.
- Looking for red flags

---

---

---

---

---

---

---

---

### Neurological Exam

---

#### Motor exam

- Biceps C5, 6
- Triceps C6, 7, 8
- Four finger abduction C8, T1
- \*Note: you have covered the entire brachial plexus with these selected groups.

---

---

---

---

---

---

---

---

### Neurological Exam

---

#### Motor Exam

- Hip flexors (iliopsoas) L2, 3, 4
- Knee flexors L5, S2
- Foot plantar flexors S1, 2

---

---

---

---

---

---

---

---

### Summary

- ❑ Look for concordance, do these findings add up and support diagnosis?
- ❑ Do they make sense given the chief complaint, history, and imaging?
- ❑ Are there reds flags affecting care?

---

---

---

---

---

---

---

---

### Acute, 1<sup>st</sup> time lumbar raduculiits

- ❑ 3 weeks of severe lower back pain with radiation to the right medial ankle.
- ❑ Not improving with NSAIDS. No injury. Not able to work, has been mostly bedridden
- ❑ Subjective weakness right leg, antalgic gait, some distress.
- ❑ No red flags, no contraindication for NSAIDS, opioid therapy
- ❑ Initial treatment
  - ❑ Toradol, TPI and/ or oral steroids. +/- short course tramadol, muscle relaxant
  - ❑ Hesitate to initiate adjuvants initially but not wrong
  - ❑ Plain films, plus MRI if has access to it.
  - ❑ Referral

---

---

---

---

---

---

---

---

### Opioid Therapy

- ❑ Comfort, interest, experience, practice environment.
- ❑ Know your CDC Guidelines, DEA material.
- ❑ Monitoring
  - ❑ PMP
  - ❑ UDS
- ❑ Be comfortable with frank discussions about history, abuse, alcoholism, etc.
- ❑ Set your limits, amount, time, etc.

---

---

---

---

---

---

---

---

### In the News

#### 9-0 Supreme court decision 2022

The decision gives physicians charged with illegally prescribing opioids a fighting chance against law enforcement by requiring that prosecutors prove that they had criminal intent, rather than simply having to show that their prescribing did not conform to standardized guidelines.



---

---

---

---

---

---

---

---

---

---

### In-clinic options

- Joint, other injections
- Trigger point injections
- IM injections
- Acupuncture \*

---

---

---

---

---

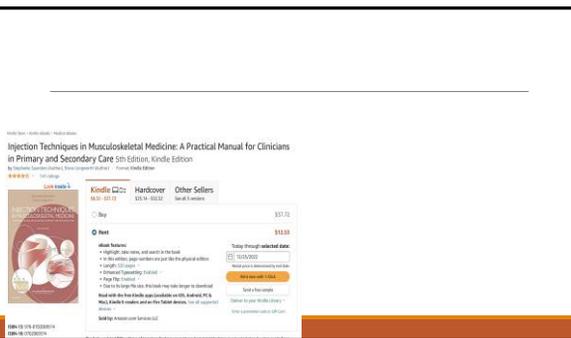
---

---

---

---

---



---

---

---

---

---

---

---

---

---

---

### In-clinic options

- ❑ Trigger point injections
  - ❑ Great for acute or recurrent pain.
  - ❑ Often just local or local plus steroid
- ❑ Blackbelt tip #1
  - ❑ Use non-particulate steroid like Decadron if you're new.

---

---

---

---

---

---

---

---

### In-clinic options

- ❑ Trigger point injections
  - ❑ Blackbelt tip #2
    - ❑ Acute sciatica loves an ipsilateral sciatic notch injection. 10-15 mg dexamethasone in 5-10 cc 1% lidocaine. Find the tender most point and get in there deep.

---

---

---

---

---

---

---

---

### In-clinic options

- ❑ Trigger point injections
  - ❑ Blackbelt tip #3
    - ❑ Thoracic spine- stay within 2cm of the midline spinous process. Angle inwards.
    - ❑ Pneumothorax is the #1 complication of TPI.

---

---

---

---

---

---

---

---

### Occipital Nerve Block

- ▶ Blindly
- ▶ Often sufficient
- ▶ For modulation of migraine, upper cervical pain
- ▶ For diagnosis and treatment of true occipital neuralgia

---

---

---

---

---

---

---

---

### Case Report

58 year old female

26 months of posterior headaches after trauma, had lumbar and cervical complaints initially.

Lumbar problems resolved with ESIs.

Cervical ACPD was performed which mostly resolved cervical complaints.

Occipital Headaches, slightly greater right than left

Occiput to the crown, occasionally farther forward.

Constant moderate to severe pain

Allodynia

- Putting on clothing hurts
- Can't get a haircut
- Cant tolerate ACP

Debilitating when flared.

---

---

---

---

---

---

---

---

### Occipital Nerve Block

- ▶ Performed blindly
- ▶ 1 month follow up
- ▶ Brief Flare at injection site
- ▶ At 1-week symptoms resolved entirely for 2 weeks
- ▶ At 1 month, only intermittent symptoms, about 80% relief.
- ▶ This was in July, haven't heard anything further.
- ▶ Consider U/S Guided, RF

### Occipital nerve block




---

---

---

---

---

---

---

---

## Acupuncture



In Louisiana, requires a separate license for physicians and 200 CME hours of training.



There are several organizations offering courses for licensure



It could be a very interesting journey and a way to enhance your practice.

---

---

---

---

---

---

---

---

## Acupuncture

In my opinion, nothing comes close to acupuncture in terms of

- Cost
- Side Effects
- Complications
- For many, the effectiveness

---

---

---

---

---

---

---

---

## General Considerations



Do no harm



Can the procedure be performed safely



Do the benefits outweigh the risks?

Decreased medication usage  
Improved quality of life



Consent



Alternatives

---

---

---

---

---

---

---

---

So what are we doing anyway

- Diagnosing- often in partnership with referring physicians
- Avoiding and or limiting the role of medications
- Enabling increased function, exercise, participation in physical therapy
- Decreasing pain due to inflammation
- Interrupting transmission of pain sensations
- Neuromodulation

---

---

---

---

---

---

---

---

IPM

- Acupuncture
- Interventional Headache
- Spine Treatments
- Peripheral Treatments
- Implantable Therapies
  - Intrathecal Drug Delivery
  - Spinal Cord Stimulation
  - Verteflex Superior

---

---

---

---

---

---

---

---

Acupuncture

---

---

---

---

---

---

---

---

---

Cupping...  
Yeah, got  
in trouble  
for that  
one

---

---

---

---

---

---

---

---

### Referral Considerations

- ❑ Generally, IPM is a reasonable referral for chronic pain of any origin, once red flags excluded.
- ❑ We manage stable, non-operative conditions chronically.
- ❑ We evaluate and diagnosis acute and sub-acute conditions
- ❑ We work closely with spine surgeons, orthopedists, etc. and can make those referrals up the treatment chain as needed.

---

---

---

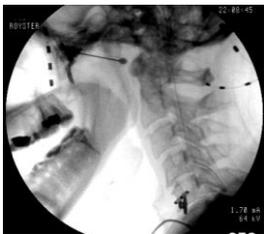
---

---

---

---

---



### Sphenopalatine Ganglion Block

- ❑ Chronic Headaches
- ❑ V2 Trigeminal Neuralgia
- ❑ Pulsed RF is a great option

---

---

---

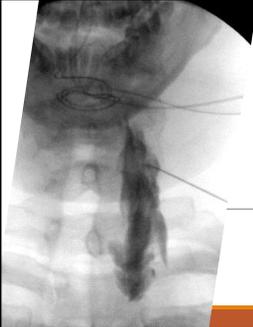
---

---

---

---

---



### Stellate Block AP

NICE LONGITUDINAL SPREAD

STELLATE BLOCKS FOR SYMPATHETICALLY MEDIATED PAIN OF THE HEAD, UPPER EXTREMITY AND THORAX.

SIMILAR TO SPG BLOCKS IN CLINICAL PRACTICE FOR HEADACHES

---

---

---

---

---

---

---

---

### Cervical Joints and Cervicogenic Headaches

Atlanto-occipital joints- rarely used in my practice.

Atlantoaxial joints

- up to 10-20% of occipital headaches after whiplash

C2/3 Facet Joints

- 20-30% of headaches after whiplash injury

C3/4, C4/5

Soft tissues

---

---

---

---

---

---

---

---



ROVSTER

51

2-20 70

CERV FACET

OE

Left C4/5 facet block with intra-articular spread of contrast.

---

---

---

---

---

---

---

---

### Non- and Post-operative Shoulder Pain

- Suprascapular nerve blocks
- Pulse RFA

---

---

---

---

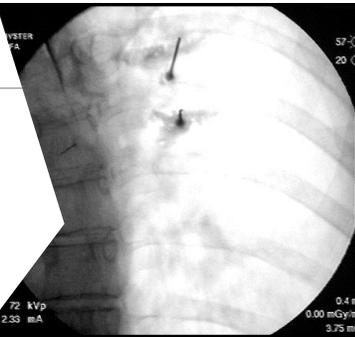
---

---

---

---

### Intercostal Blocks and RFA



---

---

---

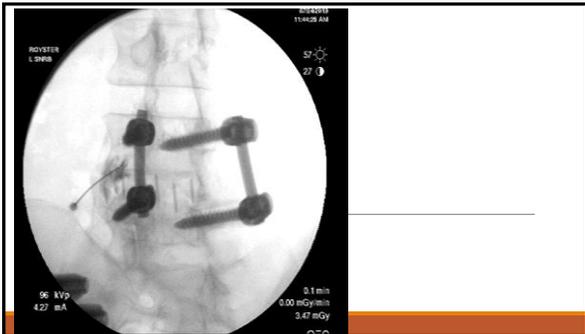
---

---

---

---

---



---

---

---

---

---

---

---

---

### Lumbar considerations

- Disc supplementation, biologics
- Spinal stenosis on MRI is often not clinically the dominant issue. Often, facetogenic pain that is invariably present is dominant.
- Facet and or medial branch blocks, RFA are the mainstay for chronic neck and back pain.

---

---

---

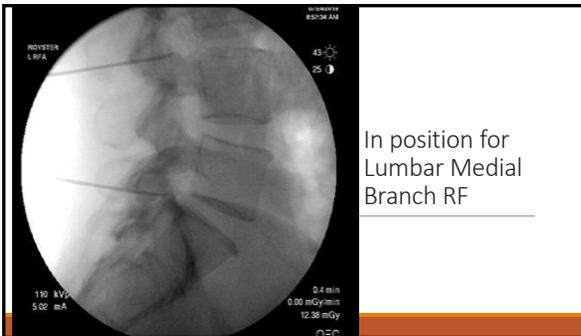
---

---

---

---

---



In position for Lumbar Medial Branch RF

---

---

---

---

---

---

---

---

### Sacroiliitis



- Intra-articular injections
- Peri-articular infiltrations
- Radiofrequency (RF) ablation.
- Percutaneous fusion

---

---

---

---

---

---

---

---

### Knee, shoulder, and hip pain

- Overall, 46% of patients reported persistent pain at the surgical site - 53% after TKR and 38% after THR

---

---

---

---

---

---

---

---

### Genicular Ganglion Block and RFA

BLOCK OF THE SUPERIOR AND LATERAL INFERIOR BRANCHES



---

---

---

---

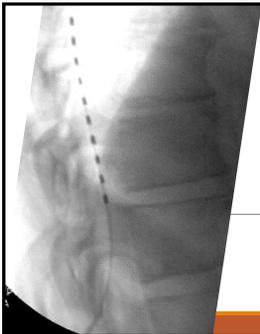
---

---

---

---

### Spinal Cord Stimulation



---

---

---

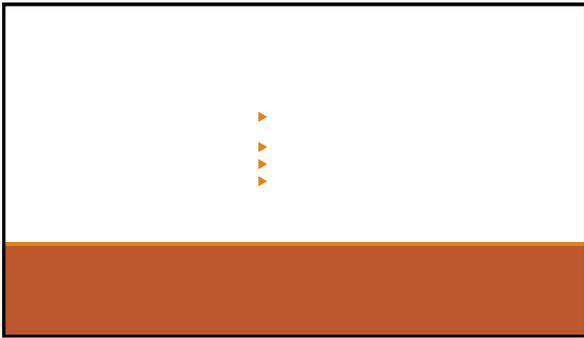
---

---

---

---

---



---

---

---

---

---

---

---

---

# Intrathecal Drug Delivery

---

---

---

---

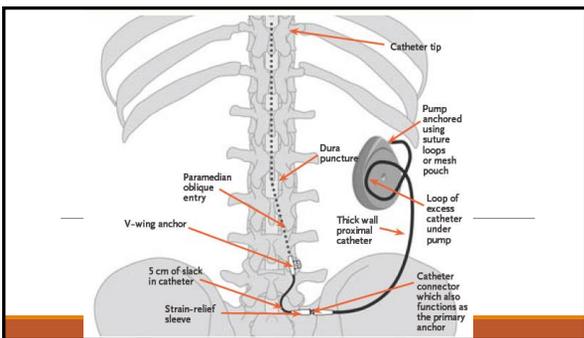
---

---

---

---

---



---

---

---

---

---

---

---

---

# Questions?

---

---

---

---

---

---

---

---

---

---

Citations and Sources

1. Department of Health and Human Services' Interagency Pain Research Coordinating Committee. National Pain Strategy: A Comprehensive Population Health-Level Strategy for Pain. 2016.
2. Dowell D, Hagerich T, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. *MMWR Recomm Rep* 2016;315(15):1624–45.
3. Friedman BM, Dym AA, Davitt M, et al. Naproxen with cyclobenzaprine, cyclobenzaprine, or placebo for treating acute low back pain: A randomized clinical trial. *JAMA* 2014;311(13):1772–80.
4. Goldberg H, Finch W, Tyburski M, et al. Oral steroids for acute radiculopathy due to a herniated lumbar disk. *A randomized clinical trial. JAMA* 2015; 313(19):1915–23.
5. Chou R, Hoshino K, Friedli J, et al. Epidural corticosteroid injections for radiculopathy and spinal stenosis: A systematic review and meta-analysis. *Ann Intern Med* 2015;163(5):373–83.
6. Casey E. Natural history of radiculopathy. *Phys Med Rehabil Clin N Am* 2011;22(1):1–5.
7. Fernandes L, Hagen KB, Bijlma RJ, et al. EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis. *Ann Rheum Dis* 2013;72(1):116–25.
8. Whiting PF, Wolff RF, Deshpande S, et al. Cannabinoids for medical use: A systematic review and meta-analysis. *JAMA* 2015;313(24):2456–73.
9. Moore NE, Greco CM, Moore CG, et al. A mind-body program for older adults with chronic low back pain: A randomized clinical trial. *JAMA Intern Med* 2016;176(3):329–37.
10. Cherkin DC, Sherman KJ, Balderson BH, et al. Effect of mindfulness-based stress reduction vs cognitive behavioral therapy or usual care on back pain and functional limitations in adults with chronic low back pain: A randomized clinical trial. *JAMA* 2016;315(11):1240–9.
11. Goyal M, Singh S, Sibinga EM, et al. Meditation programs for psychological stress and well-being: A systematic review and meta-analysis. *JAMA Intern Med* 2014;174(3):187–98.
12. Zhang Y, Peck K, Spalding M, Jones BG, Cook RL. Discrepancy between patients' use of and health providers' familiarity with CAM. *Patient Educ Couns* 2012;89(3):399–404.

---

---

---

---

---

---

---

---

---

---

Citations and Sources

13. Shelley BM, Susman AL, Williams RL, et al. "They don't ask me so I don't tell them": Patient-clinician communication about traditional, complementary, and alternative medicine. *Ann Fam Med* 2009;7(2):139–47.
14. Heapy AA, Higgins DM, Cerone D, et al. A systematic review of technology-assisted self-management interventions for chronic pain: Looking across treatment modalities. *Clin J Pain* 2015;31(6):470–92.
15. Bair MJ, Ang D, Wu J, et al. Evaluation of stepped care for chronic pain (escape) in veterans of the Iraq and Afghanistan conflicts: A randomized clinical trial. *JAMA Intern Med* 2015;175(5):682–9.
16. Steffens D, Maher C, Pereira L, et al. Prevention of low back pain: A systematic review and meta-analysis. *JAMA Intern Med* 2016;176(2):199–208. Becker et al. 48
17. Dunlop DD, Song J, Semanik PA, et al. Relation of physical activity time to incident disability in community-dwelling adults with or at risk of knee arthritis: Prospective cohort study. 2014;348:g2472.
18. White DK, Tudor-Locke C, Zhang Y, et al. Daily walking and the risk of incident functional limitation in knee osteoarthritis: An observational study. *Arthritis Care Res (Hoboken)* 2014;66(9):1328–36.
19. Buchbinder R, Blyth FM, March LM, et al. Placing the global burden of low back pain in context. *Best Pract Res Clin Rheumatol* 2013;27(5):575–89.
20. Marchikanti L, Knezevic NN, Boswell MV, Kaye AD, Hirsch JA. Epidural injections for Lumbar Radiculopathy and Spinal Stenosis: A Comparative Systematic Review and Meta-Analysis. *Pain Physician*. 2016 Mar;19(3):E365-410. PMID: 27082396.
21. Carey TS, Freburger JK. Exercise and the prevention of low back pain: Ready for implementation. *JAMA Intern Med* 2016;176(2):208–9.

---

---

---

---

---

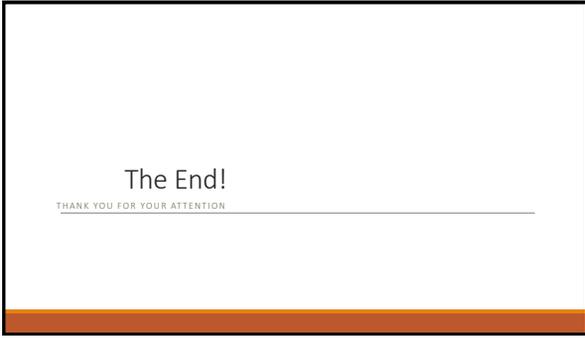
---

---

---

---

---



---

---

---

---

---

---

---

---

# Neuropathic Pain: Can CGRP Modulation Help?

Raghav Govindarajan,  
MD

## Neuropathic Pain: Can CGRP Modulation Help?

Raghav Govindarajan, MD, FAAN, FANA, FACP, FRCP (Edin.),  
FRCP (London)  
HSHS Medical Group, Neurosciences O'Fallon  
Adjunct Clinical Professor of Neurology, SIU-SOM  
Adjunct Clinical Professor of Neurology, ATSU-SOM  
3 St. Elizabeth's Blvd.  
O'Fallon, IL-62269

---

---

---

---

---

---

---

---

### Disclosures:

I have received financial compensation for serving on the speakers bureau for Biohaven

---

---

---

---

---

---

---

---

### Talk structure

- Role of CGRP in pain modulation
- CGRP modulation in migraine
- CGRP therapy for migraine
- CGRP therapy for neuropathic pain

---

---

---

---

---

---

---

---

CGRP:  
Distribution and Function

- Widely distributed – central ( $\alpha$ ) and peripheral ( $\beta$ ) nervous systems
- CGRP containing nerves provide innervation to all
  - the major organs: brain, heart, lung, kidney, etc.
- Effects on respiratory, endocrine, gastrointestinal,
  - central nervous, immune, and cardiovascular
  - systems
- Functions
  - Vasodilation, inflammation
  - Nociception, hyperalgesia

---

---

---

---

---

---

---

---

By binding to this receptor,  $\alpha$ CGRP will suppress deleterious effects mediated by the angiotensin II type 1 (AT1) and endothelin type A (ETA) receptors, as well as reduce the activity of the sympathetic nervous system (SNS)

---

---

---

---

---

---

---

---

Distribution of CGRP in central and peripheral nervous system

---

---

---

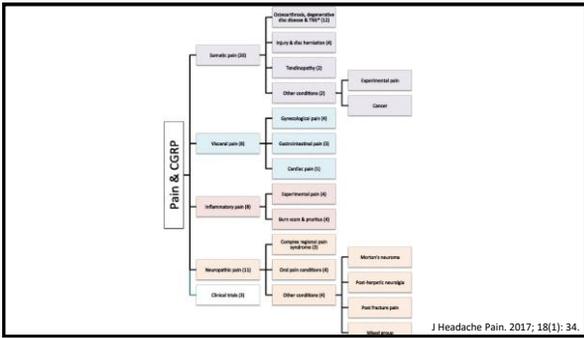
---

---

---

---

---



---

---

---

---

---

---

---

---

Role of CGRP in Migraine

---

---

---

---

---

---

---

---

CGRP modulation in Migraine

---

---

---

---

---

---

---

---

Types of CGRP modulation

---

---

---

---

---

---

---

---

CGRP in Migraine

- CGRP is released into jugular venous system during migraine
- Serum CGRP levels are elevated in chronic migraine
- CGRP infusion evokes migraine
- Small-molecule CGRP-receptor antagonists (gepants) effectively abort migraine attacks
- Anti-CGRP and anti-CGRP-receptor monoclonal antibodies prevent episodic migraine (EM) and chronic migraine (CM)

---

---

---

---

---

---

---

---

Small Molecule vs Mab

Small Molecules	Monoclonal Antibodies
• Target specificity lower	Target specificity high
• Clearance (liver, kidney)	Clearance RES
• Size <1 kD	Size ~150 kD
• Oral	Parenteral
• Can cross BBB	Do not cross BBB
• Half-life = minutes to hours	Half-life = 3–6 weeks
• Immunogenicity (no)	Immunogenicity (yes)

---

---

---

---

---

---

---

---

### Telcagepant

- 19,820 acute attacks were treated with telcagepant: “Telcagepant was generally well tolerated when administered for the acute intermittent treatment of migraine for up to 18 months. The incidences of triptan-related and drug-related adverse events favored telcagepant over rizatriptan”
- Preventive trial: Out of 660, 13 patients had ALT elevation  $\geq 3 \times$  the upper limit of normal and 7 of these had an AST elevation  $\geq 3 \times$  the upper limit of normal. 2 patients had very high symptomatic transaminase elevations that occurred within 2-6 weeks of treatment initiation and resolved after treatment discontinuation.

---

---

---

---

---

---

---

---

### Rimegepant

- Two Phase 3 trials
- Pain freedom at 2 hours: rimegepant in Study 301 and 302: 19.2% and 19.6%, vs 14.2% ( $p < 0.03$ ) and 12.0% ( $p < 0.001$ ) in the placebo groups
- Freedom from the most bothersome symptom (MBS) for rimegepant in Study 301 and 302: 36.6% and 37.6%, respectively, vs 27.7% ( $p < 0.002$ ) and 25.2% ( $p < 0.0001$ ) for placebo
- AEs comparable to placebo

---

---

---

---

---

---

---

---

### Ubrogepant

Endpoints	Statistics	Placebo (N=456)	Ubro 50mg (N=423)	Ubro 100mg (N=448)
Co-Primary Endpoint 1: Pain Freedom 2 Hours After Initial Dose	Pain Free at 2 Hours, %	11.8	19.2	21.2
	Adjusted p-value	-	0.0023	0.0003
Co-Primary Endpoint 2: Absence of Most Bothersome Symptom <sup>1</sup> 2 Hours After Initial Dose	Absence of MBS <sup>1</sup> , %	27.8	38.6	37.7
	Adjusted p-value	-	0.0023	0.0023

---

---

---

---

---

---

---

---

### Ubrogепant

- LFTs
- 6 cases with ALT >3x ULN
- 1/6 on pbo
- 5/6 on ubrogепant
- 2/5 are ALT>5x
- 1/5 is ALT>10x

---

---

---

---

---

---

---

---

### CGRP Monoclonal Antibodies

- Erenumab (Aimovig) SQ – Episodic & Chronic Migraine – monthly
  - Galcanezumab SQ – Episodic & Chronic Migraine, Cluster – monthly
  - Fremanezumab SQ – Episodic & Chronic Migraine - monthly/Q12 weeks
  - Eptinezumab IV – Episodic & Chronic Migraine - monthly/Q12 weeks
- mAb against CGRP receptor vs. CGRP:  
• Receptor mAb block receptor from signaling transmission vs removal of excess CGRP released from perivascular trigeminal nerve endings

---

---

---

---

---

---

---

---

### Erenumab: Phase 3 data

- Episodic migraine
  - 70 mg vs placebo
  - Treatment Q month for 12 weeks
  - Reduction in number of migraine days/month: 2.9 vs. 1.8 (placebo)
- Chronic Migraine (STRIVE)
  - 70 mg vs 140 mg vs. placebo
  - Treatment Q month for 24 weeks
  - Reduction in migraine days/month: 3.2 vs. 3.7 vs. 1.8 (placebo)
  - AE: Injection site pain, URI, Nausea

---

---

---

---

---

---

---

---

### Galcanezumab: Phase 3 Data

- Episodic Migraine (EVOLVE-1/2)
  - 240/120mg vs. 240mg vs. placebo
  - Treatment Q month x 6 months
  - Reduction in monthly migraine headache days: 4.73 vs 4.57 vs 2.81 , 4.29 vs. 4.18 vs. 2.28
  - 50% response rate- 60% vs 40%
  - 100% response rate - less than 20% vs. 5%
- Chronic Migraine (REGAIN)
  - 240/120mg vs. 240mg vs. placebo
  - Treatment Q month x 3 months
  - Reduction in monthly migraine headache days: 4.83 vs. 4.62 vs. 2.74
  - 50% response rate 27.6% vs. 27.5% vs. 15.4%
  - AE: Injection site reaction, injection site pruritus

---

---

---

---

---

---

---

---

---

---

### Galcanezumab: Phase 3 for Cluster headache

- Episodic cluster headache trial
- 106 patients
- average 17.5 cluster headache attacks per week at baseline
- once-monthly galcanezumab 300mg vs placebo.
- statistically significant difference in the reduction of weekly attacks
  - (-8.7 for galcanezumab vs -5.2 for placebo; P=.036).
- Significantly more patients on galcanezumab achieved ≥50% reduction in weekly cluster headache attacks
- Discontinuation rates: 8% treatment group and 21% placebo group
- Chronic cluster headache trial – no efficacy

---

---

---

---

---

---

---

---

---

---

### Fremanezumab: Phase 3 Data

- Episodic Migraine (HALO)
  - 225mg vs. 675mg/placebo/placebo vs. placebo
  - Q month for 3 months (group 2 only 1 treatment)
  - Reduced headache days: 3.7 vs. 3.4 vs. 2.2
- Chronic Migraine (HALO)
  - 675/225/225 vs. 675/placebo/placebo vs. placebo
  - Q month for 3 months
  - Reduced headache days: 4.6 vs. 4.3 vs. 2.5
  - 50% responders: 40.8% vs. 37.60% vs. 18.10%
  - AE: Injection site pain, injection site induration, injection site erythema

---

---

---

---

---

---

---

---

---

---

### Fremanezumab: Phase 3 Data

- Frequent episodic migraine (PROMISE 1)
- 100 mg vs. 300 mg vs. placebo IV
- Treatment Q 3 months x 24 weeks
- Reduction of migraine days: 30.8% vs. 31.5% vs. 20.3%
- 19-23% had 100% response – no migraines for 3 months vs 14%
- AEs similar to placebo

---

---

---

---

---

---

---

---

### Fremanezumab: Phase 3 Data

- Chronic Migraine (PROMISE 2)
- Primary endpoint – drop of 8.2 monthly migraine days vs 5.6 for placebo p<0.0001
- Rapid Day One prevention: reduction in migraine risk on Day One post-infusion 52% vs 27% placebo, p<0.0001
- Responder rates for month 1-3
- 61% - ≥ 50% reduction in migraine days vs 39% for placebo, p<0.0001
- 33% - ≥ 75% reduction in migraine days vs 15% for placebo, p<0.0001
- 15% - 100% response for a full three months vs 5% for placebo, p<0.0001
- All other pre-specified key secondary endpoints were met with very high statistical significance

---

---

---

---

---

---

---

---

### Anti-calcitonin gene-related peptide monoclonal antibodies for neuropathic pain in patients with migraine headache

- Patients with a diagnosis of both refractory migraine headache and peripheral neuropathy (diagnosed by electrodiagnostic studies) with neuropathic pain, as well as a minimum of a 1-year follow-up visit after starting treatment, were included.
- Refractory migraine was defined as a persistent migraine headache (more than 15 days per month) that failed to respond to two or more medications.

Musick & Nerve, 2021;63:563-576

---

---

---

---

---

---

---

---

- Patients were excluded from the study if they had a recent stroke or a history of stroke.
- We collected data on patient demographics, clinical features, medications taken for neuropathy and migraine headache, scores on the Neuropathic Pain Scale (NPS), and number of migraine headache days (MHDs) per month. NPS scores and number of monthly MHDs comprised the patient-reported data

---

---

---

---

---

---

---

---

### Neuropathic Pain Scale

- The NPS is a patient-reported scoring system for assessing neuropathic pain, including monitoring response to treatment.
- The descriptors or domains evaluated contain include: intense, sharp, hot, dull, cold, sensitive, itchy, unpleasant, deep, and surface.
- Scores range from 0 to 100. Scores were recorded both before and after treatment with anti-CGRP monoclonal antibodies.

---

---

---

---

---

---

---

---

TABLE 1 Patient characteristics, NPS scores, and number of monthly MHDs

Patient No.	Sex	Age	Diagnosis	Case of neuropathy at baseline	NPS score at baseline	MHDs/month at baseline	Medications regimen at baseline	Medications regimen at 12 months after administration of anti-CGRP
1	F	49	Diabetes	90	22		Galoperone 100 mg 2 times daily + duloxetine 60 mg twice daily	Galoperone 300 mg 3 times daily + duloxetine 60 mg
2	M	52	Diabetes	90	18		Galoperone 100 mg 2 times daily + amitriptyline 50 mg at bedtime + tramadol 50 mg twice daily	Galoperone 600 mg 3 times daily
3	F	54	Diabetes	80	20		Galoperone 100 mg 2 times daily + tramadol 50 mg twice daily	Galoperone 600 mg 3 times daily
4	F	56	Diabetes	90	16		Phenytoin 50 mg + duloxetine 50 mg	Phenytoin 50 mg + duloxetine 50 mg
5	M	60	Diabetes	90	15		Phenytoin 150 mg twice daily + duloxetine 60 mg twice daily	Galoperone 300 mg 3 times daily
6	M	60	Diabetes	90	15		Galoperone 100 mg 2 times daily + duloxetine 60 mg twice daily + tramadol 50 mg twice daily	Galoperone 600 mg 3 times daily + tramadol 50 mg twice daily
7	M	38	T1-HDS	90	21		Galoperone 100 mg 2 times daily + gabapentin 75 mg bid	Phenytoin 50 mg twice daily + gabapentin 75 mg twice daily
8	F	42	T1-HDS	300	21		Phenytoin 150 mg twice daily + gabapentin 150 mg twice daily	Galoperone 300 mg 3 times daily + gabapentin 150 mg twice daily
9	F	44	Idiopathic	90	18		Galoperone 600 mg 3 times daily + duloxetine 60 mg twice daily + tramadol 50 mg bid	Galoperone 600 mg 3 times daily + duloxetine 60 mg twice daily
10	M	54	Idiopathic	90	22		Galoperone 100 mg 2 times daily + duloxetine 60 mg twice daily	Tizanidine 75 mg twice daily
11	M	57	Diabetes	90	18		Galoperone 100 mg twice daily + duloxetine 60 mg twice daily	Galoperone 300 mg 3 times daily + amitriptyline 50 mg twice daily
12	F	46	Idiopathic	90	21		Galoperone 100 mg 2 times daily + amitriptyline 50 mg twice daily	Amitriptyline 75 mg twice daily
13	F	45	Idiopathic	90	22		Acetaminophen 75 mg twice daily + pregabalin 150 mg twice daily + galoperone 100 mg twice daily	Neurospine 75 mg twice daily + galoperone 300 mg 3 times daily
14	F	42	Idiopathic	90	22		Neurospine 150 mg twice daily + galoperone 100 mg twice daily	Galoperone 600 mg 3 times daily + tramadol 50 mg twice daily

Abbreviations: F, female; M, male; MHD, migraine headache day; NPS, Neuropathic Pain Scale; T1-HDS, treated diabetes by H1AC (type 1).

---

---

---

---

---

---

---

---

Results

With treatment of anti-CGRP monoclonal antibodies, patients reported a 41.7% decrease in NPS scores from 89.3 at baseline to 52.1 at 12 months posttreatment (P < 0.05).

In addition, there was a 33.3% decrease in MHDs per month from 19.8 at baseline to 13.2 at 12 months posttreatment (P < 0.05)

---

---

---

---

---

---

---

---

Neuropathy pain (A) and migraine headache scores (B) before and after the administration of anti-calcitonin gene-related peptide monoclonal antibodies

---

---

---

---

---

---

---

---

Questions?

---

---

---

---

---

---

---

---

Thank you

---

---

---

---

---

---

---

# Peripheral Nerve Interventions

Mercy Udoji, MD

Legal Issues for  
Telehealth and E/M  
Billing During and After  
COVID

David Vaughn. Esq. CPC



## Telehealth & E/M

Presented by  
David M. Vaughn, Esq., CPC  
[david@lalawfirm.net](mailto:david@lalawfirm.net)

---

---

---

---

---

---

---

---



## CMS List of Telehealth Codes

- CMS has an Excel spreadsheet of codes
  - Status field will have 1 of 3 categories
  - Blank status = permanent
  - Temporary addition for PHE = will end 151 days after the PHE
  - Available up through 12/31/23
- Also says whether audio only is allowed

---

---

---

---

---

---

---

---



## Commercial Insurers

- Don't have to follow Medicare
- Can have their own network rules

---

---

---

---

---

---

---

---

### Where Can Provider Be

- Provider does not have to be at office
- CMS has no payment restrictions
- You bill as if you were at the office
- But there may be state law restrictions
  - If you are out of state
  - If the patient is out of state

---

---

---

---

---

---

---

---

### Out of the State or Country

- Cannot bill telehealth out of the country
- Out of State:
  - If you are on vacation in another state
  - Need to check the laws of that state
  - ASIPP has Interstate Telemedicine Guidelines
  - Shows rules for each state

---

---

---

---

---

---

---

---

### Where Can the Patient Be

- Insofar as reimbursement is concerned
  - Pt can be anywhere in the country
  - Could be at home
  - State laws may affect scope of practice
- Usually, Pt has to be at "originating site"
  - Another provider's office or facility
  - In a rural area

---

---

---

---

---

---

---

---

### Telephone Only Calls

- 99441-99443
  - 99441 – (5-10 minutes) – document at least 5
  - 99442 – (11-20 minutes)
  - 99443 (21-30 minutes)
- MD or QHP (NP/PA)
- Not originating from E/M w/i past 7 days
  - Or leading to new E/M in next 24 hours

---

---

---

---

---

---

---

---

### Payment for 99441-99443

- 99441 = 99212
- 99442 = 99213
- 99443 = 99214

---

---

---

---

---

---

---

---

### Telephone Only Codes Will They Become Permanent

- Proposed 2023 Fee Schedule Rule
  - 99441-99443 will not be made permanent
- 3 Sunset dates for telehealth codes
  - Permanent codes will not sunset
  - Category 3 codes sunset 12/31/23
  - "Temporary addition for the PHE"
    - Sunsets 151 days after PHE per Proposed Rule

---

---

---

---

---

---

---

---

## Incident to Direct Supervision

- During PHE the direct supervision changed
  - No longer had to be in the office
  - Could be supervising remotely via audio/visual
  - Merely have to be available, not attending Live
- That will cease after the PHE

---

---

---

---

---

---

---

---

## Telehealth POS Codes

- CMS
  - POS is where you would have seen the Pt
  - For office-based, that is POS 11
  - Don't use POS 02 = facility rate reimbursement
- Other payers
  - POS 10 – Telehealth where Pt in their home
  - POS 02 – Telehealth where Pt not in their home

---

---

---

---

---

---

---

---

## Telehealth Modifiers

- CMS
  - 95
- Commercial
  - 95, or
  - GT – Interactive audio/video communications

---

---

---

---

---

---

---

---



## Audio-Visual Telehealth Visits

- 99202-99205
  - New patients
- 99211-99215
  - Established patients
- Must document that interactive audio-visual telecommunication device used

---

---

---

---

---

---

---

---



## Audio-Visual Visits

- Two pathways to bill
  - Time
  - Medical Decision Making ("MDM")

---

---

---

---

---

---

---

---



## Coding Pathway #1: Time

CPT Code	Minutes
99202	15-29 minutes
99203	30-44 minutes
99204	45-59 minutes
99205	60-74 minutes
99212	10-19 minutes
99213	20-29 minutes
99214	30-39 minutes
99215	40-54 minutes

---

---

---

---

---

---

---

---

## Counseling Time

- Old Rule:
  - Time only used when counseling
- New Rule
  - Don't need counseling to bill time
  - You can count counseling time; not required
- Hospital E/M
  - Billing by time requires counseling; no changes

---

---

---

---

---

---

---

---

## Face and Non-Face Time 99202-99215

- Count: Face Time
- Count: Non-face time
- Do Not Count: Non-face time if no face time
  - There must be some face time in the visit
  - Non-face time is an "add-on" to face time

---

---

---

---

---

---

---

---

## Activities Included in Time

- Preparing to see the patient (e.g., review of tests)
- Obtaining and/or reviewing separately obtained history
- Performing an examination and/or evaluation
- Counseling and educating the patient/family/caregiver
- Ordering medications, tests, or procedures
- Documenting clinical information in the record
- Referring and communicating with other health care professionals
- Independently interpreting test results (not separately reported)
- Communicating results to the patient/family/caregiver
- Care coordination (not separately reported)

---

---

---

---

---

---

---

---



## Time Not to Be Counted

- Do not count time spent on the following:
  - The performance of other services that are reported separately
  - Travel
  - Teaching that is general and not limited to discussion that is required for the management of a specific patient

---

---

---

---

---

---

---

---



## Recommended Time Documentation

"I spent the following minutes today related to this patient:

- Preparing to see the patient (e.g., review of tests): \_\_\_\_\_
- Obtaining and/or reviewing separately obtained history: \_\_\_\_\_
- Performing an examination and/or evaluation: \_\_\_\_\_
- Counseling and educating the patient/family/caregiver: \_\_\_\_\_
- Ordering medications, tests, or procedures: \_\_\_\_\_
- Documenting clinical information in the record: \_\_\_\_\_
- Referring/communicating with other health care professionals: \_\_\_\_\_
- Interpreting test results (not separately reported): \_\_\_\_\_
- Communicating results to the patient/family/caregiver: \_\_\_\_\_
- Care coordination (not separately reported): \_\_\_\_\_

Total: \_\_\_\_\_

---

---

---

---

---

---

---

---



## Coding Pathway #2: MDM

---

---

---

---

---

---

---

---

## Number of Elements

- MDM has 3 elements/components:
  - Problems
  - Data
  - Risk
- 2 out of 3 elements must be met

---

---

---

---

---

---

---

---

## 4 MDM Levels

- There are 4 levels of MDM
  - Straightforward
  - Low Complexity
  - Moderate Complexity
  - High Complexity
- These determine which code to bill

---

---

---

---

---

---

---

---

## MDM Level: Type of Problems

MDM Level	Types of Problems
Straightforward	1 Self-limited or minor problem
Low	2 or more self-limited or minor problems; or 1 stable chronic illness; or 1 acute, uncomplicated illness or injury
Moderate	1 or more chronic illnesses w/exacerbation, progression, or side effects of treatment; or 2 or more stable chronic illnesses; or 1 undiagnosed new problem with uncertain prognosis; or 1 acute illness with systemic symptoms; or 1 acute complicated injury
High	1 or more chronic illnesses w/severe exacerbation, progression, or side effects of treatment; or 1 acute or chronic illness or injury that poses a threat to life or bodily function

---

---

---

---

---

---

---

---







## Number of Problems Treated

- Issues:
  - One chief complaint w/multiple diagnoses listed in the assessment
  - Multiple diagnoses w/one treatment plan
- Recommendation:
  - List each problem being treated on the DOS
  - Document separate treatment plan for each problem being treated

---

---

---

---

---

---

---

---



## Data Issues

- Imaging/Tests results carried forward from previous DOS
  - Must indicate if reviewed on this DOS
  - Must relate to the MDM process
- Failure to document independent interpretation vs. review of report
  - Must state that images were reviewed and independent interpretation was performed
- Failure identify each of the separate external notes or previous records reviewed

---

---

---

---

---

---

---

---



## Risks

- Failure to identify patient and/or procedure risk factors in the visit note
  - A statement that risks were discussed w/pt is insufficient
- Failure to indicate medication management
  - Medications cannot just be listed
  - Must include dosage, frequency, side effects, etc.
  - Must document risk of specific meds prescribed

---

---

---

---

---

---

---

---



## AMA E/M FAQs

---

---

---

---

---

---

---

---



### Providers from Same Practice

- Q: If Dr. A from the practice ordered laboratory tests, but Dr. B from the same practice reviewed the results with the patient during the follow-up visit, will Dr. B get credit for reviewing the test results since Dr. B did not order them?
- A: No, the key consideration is "from the same practice." If the 2 physicians are from the same practice and same specialty, Dr. A would get a single credit for the order and review as part of the MDM.

*AMA CPT Assistant, May 2021*

---

---

---

---

---

---

---

---



### Providers from Different Practice

- Q: If Dr. A from a practice ordered laboratory tests; however, the patient relocated and went to Dr. B from a different practice who reviewed the test results with the patient during the encounter. Does Dr. A get credit for ordering the tests and does Dr. B get credit for reviewing the test results?
- A: Yes, in this scenario, Dr. A and Dr. B would each get credit for the MDM data element. Key consideration is "from a different practice." Dr. A would get a single credit for ordering the test and Dr. B would get credit for reviewing the test results toward the level of MDM.

*AMA CPT Assistant, May 2021*

---

---

---

---

---

---

---

---

## Counting Tests for Data

- Q: How should ordering multiple tests be counted for Category 1 of the MDM element of Data? For example, if the MD orders a CBC, lipid panel, and glucose test during the same encounter, would this count as ordering 3 unique tests, and if so, would this meet the required number of items in Category 1 even if there were no review of prior notes and no review of results?
- A: Yes, those 3 tests would count as 3 unique tests toward meeting the requirement for Category 1 of the MDM element of Data. The tests are unique even if they are all in the same category of test (ie, all blood tests). The review of the test results is included even if the review is not performed at the same encounter.

AMA CPT Assistant, May 2021

---

---

---

---

---

---

---

---

---

---

## In-House Lab Tests

- Q: When may a physician use in-house tests (ie, rapid strep, rapid flu, CBC) and testing as data elements toward MDM selection?
- A: According to the E/M technical corrections, point of care testing (POCT) are tests that do not require separate interpretation (ie, they are test results only). The ordering of these tests by a physician may be used as data elements for MDM selection even though the tests may be reported separately. Ordering and reviewing a test are considered a single component for MDM.

AMA CPT Assistant, July 2021

---

---

---

---

---

---

---

---

---

---

## Assessing the Level of Risk

- Q: What is the AMA's recommendation for accurately assessing the level of risk for a specific patient encounter when it is not noted in the record?
- A: The AMA does not have a recommendation for assessing the level of risk for a particular patient when the level of risk is not noted in the record. We do, however, suggest discussing the documentation with the provider for clarification. Risk for any procedure depends on specific pt risk factors and circumstances as they are assessed by the provider. As an example, a procedure may be determined high to be high risk for one pt, depending on their specific circumstances, while the same procedure may be assessed as moderate or even low risk for a different pt. The provider makes the determination based on their evaluation of the specific pt circumstances & risk factors. The risk of pt mgmt criteria applies to the pt mgmt decisions made by the reporting provider as part of the reported encounter.

AMA CPT Knowledge Base 8/12/21

---

---

---

---

---

---

---

---

---

---



## Prescription Management

- Q: Is it true that medical prescription management is always considered at a minimum moderate risk? If yes, is this regardless of the particular risk associated with a prescription medication?
- A: No. Three components are required for MDM. Regarding considering moderate risk, it is based on the physician's assessment of that particular patient's risk factors and comorbidities for that specific encounter. There are no single "standard" risk factors that would make a patient's MDM moderate risk, although medical prescription management is in the moderate risk category.

AMA CPT Knowledge Base 12/1/2021

---

---

---

---

---

---

---

---



## QUESTIONS?

---

---

---

---

---

---

---

---