Pain Pattern Explanation Forms

1. Cervical Facet Pain Pattern
2. Cervical Radicular/Dynatome Pain Pattern
3. Costotransverse Joint Pain Pattern
4. Fibromyalgia Points
5. Hip Joint Pain Pattern
6. Lumbar Dermatomes: Chemical Radiculitis
7. Lumbar Dermatomes: Disc Pathology
8. Lumbar Disc Pathology Healed
9. Lumbar Epidural Fibrosis
10. Lumbar Facet Pain Pattern
11. Lumbar Stenosis
12. Sacroiliac Joint Pain Pattern
13. Thoracic Facet Pain Pattern
14. Upper Cervical Joint Pain Pattern

The OEA pain pattern handouts are PDF files that can be used for patient education and marketing. They help you explain your diagnosis with original illustrations that the patients can take home with them. There is limited text so you can tell your explanation of the treatment plan.

The pain patterns can be printed in color or black and white. Once purchased, our business card will be replaced with yours to personalize each handout.

Each illustration is based on the pain patterns that have been established in books or research articles when available. Normal anatomy and pathoanatomy illustrations are shown for the clinician to explain the diagnosis to the patient and how their treatment can influence the pain generator. These can also be utilized as marketing tools.

The following pages are some guidelines that can be utilized to explain the handouts to patients.
Cervical Facet Pain Pattern

- The cervical facet joints are the joints of the neck.
- Neurophysiologic studies have shown that cervical facet-joint capsules are sources of neck pain.\(^1\)
- Dwyer et al.\(^2\) established pain patterns of the cervical facet joints.
  - Parasagittal cervical and cervicothoracic pain.
  - Do not/rarely cause midline cervical pain or arm pain.
  - Do not cross to the other side. Left facet joints do not cause right sided pain and vice versa.
  - Can be unilateral pain (from joints on one side of the spine) or bilateral (pain from both joints on both sides of the spine.)
- When pain is chronic or severe, the pain can extend beyond these pain patterns.
- Facet joints do not have to show degeneration on diagnostic imaging to be painful. This is usually due to a joint capsule sprain (synovitis).
- Facet joints that do show degeneration on diagnostic imaging can be either a joint capsule sprain (synovitis) or degeneration (arthrosis) or both.
- Consider that the patient may have more than one pain generator.
- Cervical facet joints limited cervical axial rotation and therefore rotation is often the most painful motion for patients with facet joint pain.\(^3\)

Cervical Radicular Dermatomes and Dynatome/Pain Patterns

- Dermatomes are regions of altered sensation from irritated or damaged nerve roots.
- Symptoms that follow a dermatome (numbness, tingling or pain) may indicate a pathology that involves the related nerve root. These symptoms can follow the entire dermatome or just part of it.
- Dynatomes are the distribution of referred pain (unlike dermatomes which only deal with sensation) from cervical root irritation. Slipman et al.\(^1\), have established the cervical dynatomes. They are similar as dermatomes but not exactly the same.
- When symptoms cover more than one dermatome/dynatome it may suggest more severe pathology and involvement of more than one nerve root.

Costotransverse Joint Pain Pattern

- Costotransverse joints are the joints where the ribs attach to the spine.
- Young et al established pain patterns for the costotransverse joints.\(^1\)
- Costotransverse joints
  - Cause parasagittal thoracic pain.
  - Do not/rarely cause midline thoracic pain or arm pain.
  - Do not cause pain that crosses to the other side. The right costotransverse joints do not cause left side thoracic pain and vice versa.
  - Can be unilateral pain (from joints on one side of the spine) or bilateral (pain from both sides of the spine).
- When pain is chronic or severe, the pain can extend beyond these pain patterns.
- Costotransverse joints do not have to show degeneration on diagnostic imaging to be painful. This is usually due to a joint sprain (synovitis).
- Costotransverse joints that do show degeneration on diagnostic imaging can be either a joint sprain (synovitis) or degeneration (arthrosis) or both.
- Consider that the patient may have more than one pain generator.

Fibromyalgia Points

Criteria for Fibromyalgia

- Widespread pain for at least three months, defined as the presence of all of the following:
  - Pain on the right and left sides of the body
  - Pain above and below the waist (including shoulder and buttock pain)
  - Pain in the axial skeleton (cervical, thoracic or lumbar spine, or anterior chest)
- Pain on palpation with a 4-kg force in 11 of the following 18 sites (nine bilateral sites, for a total of 18 sites):
  1. Occiput: at the insertions of one or more of the following muscles: trapezius, sternocleidomastoid, splenius capitus, semispinalis capitus
  2. Lower cervical: at the anterior aspect of the interspaces between the transverse processes of C5–C7
  3. Trapezius: at the midpoint of the upper border
  4. Supraspinatus: above the scapular spine near the medial border
  5. Second rib: just lateral to the second costochondral junctions
  6. Lateral epicondyle: 2 cm distal to the lateral epicondyle
  7. Gluteal: at the upper outer quadrant of the buttocks at the anterior edge of the gluteus maximus muscle
  8. Greater trochanter: posterior to the greater trochanteric prominence
  9. Knee: at the medial fat pad proximal to the joint line

Hip Joint Pain Pattern

- The hip joints are the joints where the thigh bone (femur) meets the pelvis.
- Lesher et al.\(^1\) established pain patterns for the hip joints.\(^1\)
- Hip joints
  - Cause hip, buttock, groin, thigh and even lower leg pain (10%).
  - Do not/rarely cause back pain
  - Can be unilateral pain (left or right hip) or bilateral (pain from both hips).
- When pain is chronic or severe, the pain can extend beyond these pain patterns.
- Hip joints do not have to show degeneration on diagnostic imaging to be painful. This is usually due to a joint capsule sprain (synovitis).
- Hip joints that do show degeneration on diagnostic imaging can be either a joint sprain (synovitis) or degeneration (arthrosis) or both.
- Consider that the patient may have more than one pain generator.

Lumbar Dermatomes: Chemical Radiculitis

- Discs do not have to bulge to cause pain from the nerve root. They can leak chemicals and produce nerve root pain following a dermatomal pattern.
- Dermatomes are regions of altered sensation from irritated or damaged nerve roots.
- Symptoms that follow a dermatome (numbness, tingling or pain) may indicate a pathology that involves the related nerve root. These symptoms can follow the entire dermatome or just part of it.
- When symptoms cover more than one dermatome it may suggest more severe pathology and involvement of more than one nerve root.

Lumbar Dermatomes: Disc Pathology

Lumbar Dermatomes

- In this example, nerve root pain is due to disc pathology.
- Dermatomes are regions of altered sensation from irritated or damaged nerve roots.
- Symptoms that follow a dermatome (numbness, tingling or pain) may indicate a pathology that involves the related nerve root. These symptoms can follow the entire dermatome or just part of it.
- When symptoms cover more than one dermatome it may suggest more severe pathology and involvement of more than one nerve root.

Disc Pathology: Lumbar Disc Pathology has various presentations.

1. Normal Disc
2. Internal Disc Disorder: Small tear at the inner part of the outer third of the disc where the annulus is innervated.
3. Outer Disc Disorder: Larger tear that extends to the outer part of the annulus. Discography is a good way to diagnose the morphology of the disc and establish the disc as a pain generator.
4. Protrusion: Small disc bulge and the outer layers of the annulus are intact
5. Prolapse: Large disc bulge that breaks through the layers of the annulus but not the posterior longitudinal ligament (PLL).
6. Extrusion: Large disc bulge that breaks through the layers of the annulus and the PLL. This often causes pain in a multitude of dermatomes.
7. Sequestration (not shown; rare): Disc fragment breaks away from the rest of the discs.

Lumbar Disc Pathology Healed

Lumbar Disc Pathology has various presentations:

1. Normal
2. Internal Disc Disorder
3. Outer Disc Disorder
4. Protrusion
5. Prolapse
6. Extrusion
7. Sequestration (not shown): rare

Discs do heal. However, they have poor blood supply and therefore do not heal as well as structures that have better blood supply. Therefore, it is essential to create an optimal healing environment for the discs. This includes proper nutrition and exercise.

This handout is designed to help the patient understand what is causing their pain and know that they can heal. Patients that focus on the negative sides of their condition may not heal as quickly. Therefore, this handout shows a list of treatment options that can help improve healing.
Lumbar Epidural Fibrosis

Chronic disc pathology and radiculitis can create epidural fibrosis (scar tissue in the epidural space). This scar tissue can cause severe leg pain.

This condition is more commonly seen after a lumbar surgery. Some people scar more than others. When this happens inside the spine, it can lead to epidural fibrosis.

Sometimes regular epidural can help this condition, but other times a special procedure is needed. This special procedure is called epidural lysis of adhesions or the Racz catheter procedure.

Pain patterns have not been established for lumbar epidural fibrosis. The two most common levels for lumbar surgery are L4-5 and L5-S1 and therefore the L5 and S1 dermatomes were used for the pain pattern in this handout.
**Lumbar Facet Pain Pattern**

- Neurophysiologic studies have shown that lumbar facet-joint capsules are a source of pain.¹
- Fukui et al.² established pain patterns for the lumbar facet joints:
  - There is a large overlap where the lumbar facet joints cause pain. However, it is also important to note where facet joints do not cause pain.
  - The diaphragm shows where joints most commonly cause pain.
  - Lumbar facet pain typically cause:
    - Parasagittal lumbar and buttock pain (40-70%), lateral hip (10-30%) and occasionally posterior thigh (10-30%) and groin pain (5-10%).
    - Do not/rarely cause midline lumbar pain or lower leg pain.
    - Do not cross to the other side.
    - Can be unilateral pain (from joints on one side of the spine) or bilateral (pain from both sides of the spine).

- When pain is chronic or severe, the pain can extend beyond these pain patterns.
- Facet joints do not have to show degeneration on diagnostic imaging to be painful. This is usually due to a joint sprain (synovitis).
- Facet joints that do show degeneration on diagnostic imaging can be either a joint sprain (synovitis) or degeneration (arthrosis) or both.
- Consider that the patient may have more than one pain generator.

---

Lumbar Stenosis

Stenosis is the medical term for narrowing. The lumbar spine has five vertebral bodies in the lower back. Nerve roots exit off the spinal cord travel though the spinal canal and then through small openings on the sides of the vertebrae (foramen). When the foramen is narrowed or has osteophytes (bone spurs) causing compression or irritation to the nerve roots, this is called foraminal stenosis.

The entire spinal canal can be narrowed by a combination of building discs, facet joint hypertrophy and/or ligamentum flavum hypertrophy. When this occurs and the buttock and leg symptoms are bilateral, this is central stenosis.

Lumbar stenosis can result in a variety of symptoms. Typically, symptoms are felt in the buttock and legs but can be in the low back as well. Keep in mind that if a spine is degenerated enough for stenosis, there may also be facet joint arthrosis as well. The symptoms can be tingling (paresthesia), pain, numbness, or weakness (in order of severity).

The lumbar dermatomes are listed for referral patterns of numbness or tingling per nerve root as adapted from several anatomy books.
Sacroiliac Joint Pain Pattern

- Sacroiliac joints are the joints of the pelvis where the sacrum connects to the ilium.
- The sacroiliac joint is a source of pain.
- Fortin et al.\textsuperscript{1} established pain patterns for the sacroiliac joint:
  - Typically causes buttock pain but can radiate diffusely down the posterior thigh
  - Does not/rarely cause midline lumbar pain.
  - Does not cross to the other side.
  - Can be unilateral pain (from joints on one side of the pelvis) or bilateral (pain from both sides of the pelvis).
- When pain is chronic or severe, the pain can extend beyond these pain patterns.
- Sacroiliac joints do not have to show degeneration on diagnostic imaging to be painful. This is usually due to a joint sprain (synovitis).
- Sacroiliac joints that do show degeneration on diagnostic imaging can be either a joint sprain (synovitis) or degeneration (arthrosis) or both.
- Consider that the patient may have more than one pain generator.

Thoracic Facet Pain Pattern

- Dreyfuss et al.\(^1\) established pain patterns for the thoracic facet joints:
  - Thoracic facet pain:
    - Causes parasagittal cervicothoracic and thoracic pain.
    - Does not/rarely cause midline thoracic pain or arm pain.
    - Facet joint pain does not cross to the other side.
    - Can be unilateral pain (from joints on one side of the spine) or bilateral (pain from both sides of the spine).
- When pain is chronic or severe, the pain can extend beyond these pain patterns.
- Facet joints do not have to show degeneration on diagnostic imaging to be painful. This is usually due to a joint sprain (synovitis).
- Facet joints that do show degeneration on diagnostic imaging can be either a joint sprain (synovitis) or degeneration (arthrosis) or both.
- Consider that the patient may have more than one pain generator.

Upper Cervical Joint Pain Pattern

- The upper cervical joints are the top two joints of the neck. They are called the altanto-occipital (C0-1) joint and atlanto-axial (C1-2) joint.
- These joint can cause upper cervical pain and even headaches. These headaches are called cervicogenic headaches. They can feel as severe as migraines but do not have an associated aura.
- Dreyfus et al.\(^1\) established pain patterns of the cervical facet joints.
  - Parasagittal cervical and cervicothoracic pain.
  - The altanto-occipital (C0-1) joint is generally more diffuse in the sub-occipital region.
  - The atlanto-axial (C1-2) joint is typically a smaller pain pattern behind the ear.
  - Do not/rarely cause midline cervical pain or arm pain.
  - Do not cross to the other side. Left joints do not cause right sided pain and vice versa.
  - Can be unilateral pain (from joints on one side of the spine) or bilateral (pain from both joints on both sides of the spine.)
- When pain is chronic or severe, the pain can extend beyond these pain patterns.
- Joints do not have to show degeneration on diagnostic imaging to be painful. This is usually due to a joint capsule sprain (synovitis).
- Facet joints that do show degeneration on diagnostic imaging can be either a joint capsule sprain (synovitis) or degeneration (arthrosis) or both.
- Consider that the patient may have more than one pain generator.