CLINICAL PATHWAY

Musculoskeletal Health

Lumbar Disc Herniation and Radiculopathy Pathway

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INTRODUCTION

Lumbar disc herniation and radiculopathy is a common spine condition that can lead to significant pain and loss of function. There is considerable variation in care, including the use of diagnostic tools and treatments, for this condition. The goal of this pathway is to provide evidence-based guidelines to reduce unnecessary variation in clinical care. This should result in improved clinical outcomes and decreased cost to the health system and community. This will also improve the patient experience as patients will have better expectations of the natural history of this condition and their treatment plan.

Definition: Lumbar disc herniation and radiculopathy is the localized displacement of disc material beyond the normal margins of the intervertebral disc space resulting in pain, weakness or numbness in a myotomal or dermatomal distribution (1).

Natural History: fundamental to this pathway is the fact that lumbar disc herniation and radiculopathy typically has a favorable natural history. The majority of patients will improve independent of treatment, as disc herniations often shrink/regress over time (1). Typically the goal of treatment is to provide adequate pain management to allow a patient to be functional for a period of time (often weeks or months) adequate to allow natural healing. Patient education and reassurance go a long way in the treatment of this condition, so it is important for providers to understand the typical natural history of lumbar disc herniation and radiculopathy.

Scope of this Pathway

This pathway is for patients who present to their primary care physician, the emergency department or a medical aid unit with low back and leg pain suspected to represent lumbar radicular pain, aka "sciatica."

Pathway Contacts

The content of this pathway is developed and maintained by the Musculoskeletal Health line of Christiana Care Health System. Questions or feedback about the content may be directed to:

Administrative Lead: Lori Czajkowski, Executive Assistant for Musculoskeletal Service Line
phone: 302-733-5967
e-mail: LoCzajkowski@christianacare.org

Physician Lead: Scott T. Roberts, MD
phone: 302-623-4144
e-mail: Scott.T.Roberts@christianacare.org

CLINICAL PATHWAY

Patient presents with lumbar radicular pain (leg pain +/- low back pain, aka "sciatica")

1) The first consideration is to rule out cauda equina syndrome. This is a very rare condition where acute, severe compression of the lumbar nerve roots results in significant acute neurologic loss, including acute bowel and bladder changes (inability to urinate, loss of bowel control), saddle anesthesia and bilateral lower extremity weakness and numbness. This does not include patients who present with a localized motor deficit, such as weakness with ankle dorsiflexion, great toe extension or ankle plantar flexion. If there is concern for cauda equina syndrome, the patient should be sent immediately to the emergency department to arrange for urgent surgical decompression.

2) The majority of patients do not have cauda equina syndrome and can be managed as an outpatient. While the natural history of this condition is favorable, it is difficult to predict how quickly it will resolve. Acute management upon presentation includes:
   a) Education: see "Natural History" in the introduction. It is important for patients to understand that the majority of cases can be treated conservatively. Surgery is only indicated for patients whose pain cannot be controlled with conservative care, or those who have a severe or progressive neurologic deficit.
   b) Superficial Heat: evidence supports this for acute/subacute low back pain (2).
   c) Activity modification: normal activities as tolerated; no bed rest greater than 48 hours (3).
   d) Medication management: Given the natural history of this condition, utilize the lowest effective dose for the shortest possible period of time. Start with non-opiates. Evidence for oral medications for lumbar radiculopathy is extremely limited (1). These are spine work-group

recommendations. Medication management needs to be tailored to the patient with careful consideration of comorbidities and risks/side effects of medication use:

i) NSAIDs; take risk factors into account (GI, renal, cardiovascular, and cerebrovascular history; age), consider gastro-protective agent
ii) Consider neuropathic agent (such as gabapentin) for radicular pain
iii) Consider short course of oral corticosteroids for severe pain (caution with diabetics)
iv) Muscle Relaxants: warn of sedation
v) Weak opioids or tramadol
   (1) only if non-opioids are contraindicated or ineffective
   (2) avoid routine use
   (3) avoid tramadol if on SSRI/SNRI (serotonin syndrome)
   (4) be aware of new DE controlled substance regulations

3) Referral to a spine specialist and ordering MRIs. Upon initial evaluation of the patient, there are 2 key considerations:
   a) Is pain severe, and limiting activities of daily living, or limiting the patient's ability to participate in physical therapy?
   b) Are there any red flags? Red flags include, but are not limited to (4):
      i) trauma history
      ii) unintentional weight loss
      iii) immunosuppression
      iv) history of cancer
      v) intravenous drug use
      vi) steroid use
      vii) osteoporosis
      viii) age > 50
      ix) focal neurologic deficit and progression of symptoms.

If the answer to either of these questions is yes, providers should order advanced imaging and refer to a spine specialist:

Advanced imaging:

Lumbar MRI is the preferred modality (1). This can be ordered without contrast. Contrast can be considered if the patient has had prior lumbar surgery in the region being investigated. A lumbar CT can be ordered if MRI is contraindicated. If surgery is indicated and an MRI is contraindicated, consider a CT myelogram in conjunction with the surgeon.

Specialist referral:

Treatment for these patients may include epidural steroid injection or surgery. If there is a severe or progressive neurologic deficit, the patient should be evaluated for surgery. Surgery typically involves a lumbar discectomy (Grade of Recommendation: B) (1).

If there is not a severe or progressive neurologic deficit, and pain is the primary issue, the patient should be evaluated for a lumber epidural steroid injection (Grade of Recommendation: A for short-term relief, B for functional outcomes) (1).

If pain relief is adequate with injection therapy, the patient will either be discharged home with instructions on an appropriate home exercise program, or may be sent for a short course of physical therapy for instruction on a home exercise program and secondary prevention education.

If relief is not adequate with injection therapy, the patient will be referred for surgical decompression. After surgery, if relief is adequate, the patient will either be discharged home with instructions on an appropriate home exercise program, or may be sent for a short course of physical therapy for instruction on a home exercise program and secondary prevention education.

If relief is not adequate with surgical care, the surgeon will re-evaluate the patient and consider a referral for chronic pain management.

In our community, the majority of providers who perform epidural steroid injections (PM&R, Anesthesiology-Pain, Interventional Radiology) work with spine surgeons (Orthopedic Surgery, Neurosurgery) and vice versa. Therefore, a

referral to any of these specialists will result in appropriate care as indicated by the pathway.

An urgent referral network for these patients has been developed. These are all spine providers credentialed by Christiana Care. Providers in this network have committed to seeing these patients within one week of referral. The patient or provider calling to schedule should identify the patient as an acute radiculopathy pathway patient (or "pathway patient"). Network providers can be seen at the end of this document.

4) Conservative care: if there are no red flags and pain is not limiting ADLs or ability to participate in physical therapy, conservative care is recommended as a first line of treatment. Grade of recommendation for these treatments is C - poor quality evidence, or I - insufficient or conflicting evidence (1).

a) Physical Therapy (I)
b) Chiropractic care or Osteopathic manipulative treatment (C)
c) Home exercises/self care (I)
d) Medication management - see above (I)

5) Re-evaluation after a trial of conservative care: re-evaluation is recommended at 6 weeks, unless pain is too severe to continue or a neurologic deficit progresses.

a) If relief is adequate, discharge and encourage an appropriate home exercise program.
b) If relief is not adequate, order advanced imaging and refer to a spine specialist (see above).

PATHWAY ALGORITHMS

Patient presents with lumbar radicular pain (leg pain +/- low back pain, aka "sciatica")

Is there evidence for cauda equina syndrome? (acute bowel/bladder habit changes, saddle anesthesia)

Yes

Send patient to **Emergency Department** for treatment

No

Acute Management (early days):
1. Education[2]
2. Superficial Heat
3. Activity modification: normal activities as tolerated, no bed rest >48 hours ***(CW)***
4. Medication management **(I)**[3]

Is pain severe and limiting ADLs or ability to participate in PT, or are there any red flags?[4]

No

Conservative Care
- Physical therapy **(I)**
- Chiropractic care/ OMT **(C)**
- Home exercises/self care **(I)**
- Medications **(I)**[3]

Yes

1. Advanced imaging (MRI)[4]
2. Refer to a spine specialist[5]**:**
-Interventionalist: PM&R, Anesthesiology, IR
--Surgeon: Neurosurgery, Orthopedics

Re-evaluate after 6 weeks: Is relief Adequate?

No

Yes

Discharge with home exercise program

Is there a severe or progressive neurologic deficit?

Yes

No

Injection Therapy: Epidural Steroid Injection **(A/B)**

Is Relief Adequate?

No

Surgery (B)

Yes

Is Relief Adequate?

No

-Surgeon to re-evaluate:
-Consider referral for chronic pain management:

Yes

Consider a **brief course of PT** for lumbar stabilization and secondary prevention education

NASS Grades of Recommendation:
A: Good evidence (Level I studies)
B: Fair evidence (Level II or III studies)
C: Poor quality evidence (Level IV or V studies)
I: Insufficient or conflicting evidence

URGENT REFERRAL PROVIDERS

Urgent lumbar disc herniation and radiculopathy pathway patients (those with severe pain, progressive neurologic deficit or other red flags) will be seen within one week of referral. The patient or provider requesting the appointment should identify the patient as an acute radiculopathy pathway patient (or "pathway patient")

Please contact Lori Czajkowski if you have any difficulty with getting an appointment at 302-733-5967 / loczajkowski@christianacare.org.

Groups	Contact Number for urgent referral	Providers
AdvanceXing Pain and Rehabilitation	302-384-7439	Selina Xing, MD (PM&R-Pain)
Center for Interventional Pain and Spine	302-477-1706	Philip Kim, MD; Chee Woo, MD (Anesthesiology-Pain)
Christiana Care Interventional Radiology	302-733-1487	Sudhakar Satti, MD; Thinesh Sivapatham, MD; Gregg Zoarski, MD; Barbara Albani, MD (Interventional Radiology)
Christiana Spine Center	302-623-4144	Tony Cucuzzella, MD; Elva Delport, MD; Ann Kim, MD; Nancy Kim, MD; Yong Park, MD; Scott Roberts, MD (PM&R-Spine/Pain)
Christiana Spine Consultants	302-623-4004	Rush Fisher, MD (Orthopedics-Spine)
Comprehensive Spine Center	302-734-7246	Ganesh Balu, MD (PM&R-Pain)
Delaware Back Pain and Sports	302-733-0980	Barry Bakst, DO; Stephen Beneck, MD; Arnold Glassman, DO; Rachel Smith, DO; Craig

		Sternberg, MD (PM&R-Spine/Pain)
Delaware Neurosurgical Group	302-366-7671	Leif-Erik Bohman, MD; Paul Tymour Boulos, MD; Matthew Eppley, MD; Pawan Rastogi, MD; Pulak Ray, MD; Michael Sugarman, MD; Kennedy Yalamanchili, MD (Neurosurgery-Spine)
Delaware Orthopaedic Specialists	302-655-9494	Mark Eskander, MD (Orthopedics-Spine)
First State Orthopedics	302-731-2888	Bruce Rudin, MD; James Zavlasky, DO; James Moran, DO (Orthopedics-Spine &) (PM&R-Pain)
Neurosurgery Consultants	302-738-9145	Bikash Bose, MD (Neurosurgery-Spine)

CLINICAN EDUCATION MATERIALS

- Algorithm/Referral Network reference sheet

REFERENCES

1. North American Spine Society (NASS) Evidence-Based Clinical Guidelines for Multidisciplinary Spine Care. Diagnosis and Treatment of Lumbar Disc Herniation with Radiculopathy. 2012

2. Qaseem A, et. al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. Ann Intern Med. 2017

3. Choosing Wisely Recommendation: North American Spine Society: Don't recommend bed rest for more than 48 hours when treating low back pain. 2013

4. Choosing Wisely Recommendation: North American Spine Society: Don't recommend advanced imaging (e.g., MRI) of the spine within the first six weeks in patients with non-specific acute low back pain in the absence of red flags. 2013

5. Chou R, et. al. Systemic Pharmacologic Therapies for Low Back Pain: A Systematic Review for an American College of Physicians Clinical Practice Guideline. Ann Intern Med. 2017

6. Chou R, et. al. Nonpharmacologic Therapies for Low Back Pain: A Systematic Review for an American College of Physicians Clinical Practice Guideline. Ann Intern Med. 2017

7. National Institute for Health and Care Excellence (NICE) Guideline: Low back pain and sciatica in over 16s: assessment and management. 2016

8. Atlas S, et.al. The Maine Lumbar Spine Study, Part II: 1-Year Outcomes of Surgical and Nonsurgical Management of Sciatica. Spine 1996

9. Weinstein J, et.al. Surgical vs Nonoperative Treatment for Lumbar Disk Herniation: The Spine Patient Outcomes Research Trial (SPORT): A Randomized Trial. JAMA 2006

10. Weinstein J, et.al. Surgical vs Nonoperative Treatment for Lumbar Disk Herniation: The Spine Patient Outcomes Research Trial (SPORT): A Observational Cohort. JAMA 2006

11. Peul WC, et.al. Surgery versus Prolonged Conservative Treatment for Sciatica. NEJM 2007

12. Thomas KC, et.al. Outcome Evaluation of Surgical and Nonsurgical Management of Lumbar Disc Protrusion Causing Radiculopathy. Spine 2007

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This pathway was developed by the Christiana Care Spine Work Group:

Scott Roberts, MD (PM&R) - Spine Work Group Chairman

Brian Galinat, MD, MBA (Orthopaedics) - MSK Service Line Physician Leader

Erin Watson, MD (ED)

Gregory Wanner, DO (ED)

Ganesh Balu, MD (PM&R)

Selina Xing, MD (PM&R)

Philip Kim, MD (Anesthesia)

Irina Phillips, MD (Anesthesia)

Mark Eskander, MD (Orthopaedic Spine)

Mike Murray, MD (Orthopaedic Spine)

Leif Bohman, MD (Neurosurgery)

Brad Sandella, DO (Family Med – Sports)

Dave Bercaw, MD (Family Med)

Todd Everett, PT (Physical Therapy)

Robert Dressler, MD and Kate Rudolph (BeWise Team)

Derek Vandersteur (Organizational Excellence)

Jodi Hartlep, MBA, MHA, FACHE (MSK Service Line Operations Leader)

Danny Mosby (Value Institute)

Amanda McMullen (Corporate Director Ambulatory & Network Quality)

Joe Weiss (Project Manager, Process Improvement)

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The Christiana Care Way

We serve our neighbors as respectful, expert, caring partners in their health. We do this by creating innovative, effective, affordable systems of care that our neighbors value.

CHRISTIANA CARE
HEALTH SYSTEM

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