This care process model (CPM), created by Intermountain Healthcare’s Pain Management Service, provides guidance for diagnosis and treatment of low back pain in the emergency department. This document presents an evidence-based approach that is appropriate for most patients; it should be adapted to meet the needs of individual patients and situations and should not replace clinical judgment.

**EVALUATION: Patient history (a) and physical exam (b)**

Red flags? (c)

- **yes** Evaluate for serious pathology, refer as needed (c)

- **no** True lower motor weakness?

  - **yes** Consider imaging and emergent surgical or neurological consultation (c)

  - **no** Lumbar radiculopathy (sciatica)?

    - **yes** Consider nonsurgical back specialist referral

    - **no**

**TREATMENT**

- **Education and reassurance.** Cover the points below. (Intermountain’s Patient Fact Sheet Low Back Pain in English or Spanish supports these points.)
  - A history and physical didn’t show anything dangerous. Imaging tests are NOT needed right now.
  - You’re likely to recover in a few weeks. Staying active will help you recover.

- **Activity.** See notes on page 2 about recommended physical activity.

- **Medication.** (Can use Controlled Substance Sheet to explain why opioids not prescribed.)
  - **1st line:** Acetaminophen or NSAIDs, if not contraindicated.
  - **2nd line:** Muscle relaxants, 7 days max (not in elderly).
  - **3rd line:** Short-acting opioids 2-3 days max (no better outcomes than NSAIDs).
  - Check DOPPL Database and check for medication agreement before prescribing.

- **Follow-up.** Follow-up primary care appointment and consider referral for physical therapy.

**ALGORITHM NOTES**

(a) Patient history:

- Description of current pain, time of onset, how pain responds to positioning
- Previous back history, tests and treatments
- Systemic disease (osteoarthritis, cancer, arthritis, infection, etc.)
- Neurological, bowel, & bladder symptoms

Note: Subacute (>6 weeks) and chronic (>12 weeks) back pain require special consideration based on previous history and evaluations. See back for a suggested approach for acute exacerbation of previously diagnosed chronic back pain.

(b) Physical exam:

- Motor weakness and reflex changes
- Sensory deficit (perineal or lower extremity)
- Consider rectal exam
- Dural tension (straight leg raise, pneur femoral nerve test)
- Upper motor neuron findings
- Localized spinal tenderness
- Hip examination

Note: If exam shows severe, progressive neurologic deficits, consider epidural compression and other appropriate diagnostics.

(c) See TABLE 1 below for “red flag” signs of serious pathology and suggested evaluation/referrals.

**TABLE 1: RED FLAGS FOR SERIOUS PATHOLOGY — EVALUATION AND REFERRAL**

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<th>Suspected condition and signs</th>
<th>Evaluation</th>
<th>Referral</th>
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| Suspected cauda equina syndrome: new bowel or bladder dysfunction; perineal numbness / saddle anesthesia; persistent/ increasing lower motor neuron weakness | - For suspected cauda equina: spinal MRI  
- For myelopathy/upper motor nerve changes: MRI or CT, spine or brain  
- If recent spinal injection, surgery, or anticoagulation, consider epidural hematoma | Emergent consultation with ortho/neuro spine surgeon. |
| Myelopathy/upper motor neuron changes: new-onset Babinski or sustained clonus; new onset gait or balance abnormalities; upper motor neuron weakness | - X-ray (3 views); consider CT if x-ray is nondiagnostic | Urgent consultation with ortho/neuro spine surgeon if imaging reveals fracture. |
| Recent trauma with suspected spinal fracture | - X-ray (3 views); repeat in 2 weeks if suspicion high  
- Consider MRI if suspicion high | If pain controlled and able to be discharged, referral to nonsurgical back specialist. |
| Suspected compression fracture: osteoporosis or osteoporosis risk | - X-ray (3 views): repeat in 2 weeks if suspicion high  
- Consider MRI if suspicion high | Urgent referral to oncologist. |
| Suspected cancer: History of cancer, multiple cancer risk factors, or strong clinical suspicion | - CBC, ESR, CRP  
- X-ray; if x-ray is nondiagnostic but strong suspicion remains, consider urgent MRI with gadolinium | Emergent consultation with infectious disease specialist and spine surgeon. Initiate treatment. |
| Suspected infection: immunocompromised patient, UTI, IV drug use, recent spinal procedure, or fever/chills in addition to pain with rest or at night | - CBC, ESR, CRP  
- X-ray; if x-ray is nondiagnostic but strong suspicion remains, consider urgent MRI with gadolinium | Referred to infectious disease specialist and spine surgeon. Initiates treatment. |
| Suspected autoimmune disease/polymyalgia: redness/swelling in joints, deformation of joints, extended morning stiffness, recent history (within 6 months) of chlamydia, etc. | - CBC, ESR, CRP (RF, anti-CCP, HLA B27 with tight outpatient follow-up)  
- X-ray | Referral to rheumatologist. |
| CONSIDER other emergent non-spinal causes: AAA, aortic dissection, pyelonephritis, psosas abscess, etc. | - Labs and imaging as appropriate for other non-spinal cause | Referral as appropriate, depending on non-spinal cause. |
**Key Points:**

- **Imaging is NOT generally needed to diagnose acute low back pain (LBP).** Imaging tests can lead to expensive, unnecessary interventions. If there are no “red flags” (signs of serious pathology or injury), avoid imaging tests.

- **In most cases, red flags can be identified through a patient history and physical exam.** Page 1 describes suggested elements of the history and exam, and red flags to watch for.

- **For most LBP, conservative treatment and self-care is adequate and effective.** The core treatment for acute LBP includes education and reassurance, avoidance of bed rest, and a short course of medications.

- **Recommend everyday activity and exercise.** Common exercise strategies for low back pain include:
  - Walking and aerobic exercises, which increase baseline physical activity levels, improve blood flow, and may increase endurance of postural muscles
  - Core strengthening exercises, which focus on abdominal, paraspinal, gluteal, diaphragm, and pelvic floor muscles to foster lumbar stability
  - End-range flexion/extension stretches with repeated movements (such as the McKenzie method) — these are likely to be most effective when customized by a physical therapist or physician for each patient
  - Yoga, which has been proven effective for pain management
  - Aquatic exercise, which may be preferred by some patients, as warm water can enhance flexibility and support movement

- **Unless contraindicated, acetaminophen and NSAIDs are first-line pain medications.** Opioids have been shown to have no better outcomes than NSAIDs in low back pain, and have additional side effects.

- **Consider referral for physical therapy.** Early physical therapy can decrease the likelihood of subsequent back surgery, injections, or frequent LBP-related physician visits.

- **Other interventions (injection therapy, etc.) should be delayed** until after conservative treatments and time have failed.

**REFERENCES**


