Medical Screening for the Lumbar Spine

Can a questionnaire assist with a systems review to support clinical reasoning?

Common Red Flags

- Nocturnal Pain
- Bladder Dysfunction
- Saddle Paresthesia
- Bilateral sciatica with negative straight leg raise
- Bilateral multi-segmental signs
- Three or more nerve root involved unilaterally
- Step Deformity
- Weak and painful hip flexion
- Fever, chills, sweats
- Unintended weight loss
- Arterial claudication symptoms

AHCPR Red Flags

- Age
- Trauma
- Immunosuppression
- Rest/night pain
- Lower extremity neurological deficit
- History of CA
- Saddle anesthesia
- Bladder dysfunction
- Fever, chills, night sweats (0%) ✓
- Weight loss (5%) ✓
- Recent infection (0%) ✓

✓ Only in questionnaire
Red Flags


Questions for screening

- What information should be gathered in the patient history for a thorough systems review?

Constitutional Symptoms

1. Fever 6. Weight loss
2. Night sweats 7. Fatigue
3. Day Sweats 8. Sleep pattern changes
5. Change in Bowel Habits 10. Shortness of Breath
Systems Review

- Gastrointestinal
- Genitourinary
- Cardiovascular
- Neurological
- Hematological
- Endocrine

What do I do with this information?

- What is the criteria for symptom to be considered concerning? (ie. Fever)
- When is a red flag truly a indication for referral?
- What is the best way to cluster symptoms to determine if a non-musculoskeletal cause of pain should be ruled out?
- What additional information would be helpful to obtain to provide the alternate healthcare provider to assist with the assessment process when I referral is needed?

How do I effectively communicate concerns?

- What is the best way to organize information during the referral process for the physician/physician extender to be able to quickly process the information and make an appropriate determination for care of the patient?
Appropriateness of physician recommendations?

- Did I clearly communicate the concerns regarding the patient?
- Was the information appropriately assessed for the optimal treatment plan to be formulated?
- Is the timeframe for physician consult appropriate?

Development of the Questionnaire

- Collaboration between a physical therapist and internal medicine physician followed by content review by specialists.
- Spreadsheet of incoming diagnoses
- Pilot validity study
- Revision of the questionnaire
- Pilot validity and inter-rater reliability study

Results of current assessment

### Validity

- **2013 (4/29):**
  - Sensitivity: 100% (95% CI: 0.44, 1.10)
  - Specificity: 92% (95% CI: 0.81, 0.95)
  - Negative likelihood ratio: 0.11 (95% CI: 0.01, 1.54)
  - Positive likelihood ratio: 9.36 (95% CI: 2.78, 32)
  - Positive post-test probability: 0.60
  - Negative post-test probability: 0.017

- **2014 (10/24):**
  - Sensitivity: 100% (95% CI: 0.689 - 0.100)
  - Specificity: 79% (95% CI: 0.492 - 0.951)
  - Negative likelihood ratio: 0.059 (95% CI: 0.004 - 0.902)
  - Positive likelihood ratio was 4.091 (95% CI: 1.62 - 10.33)
  - Positive post-test probability: 0.745
  - Negative post-test probability: 0.040
Inter-rater reliability

- Interclass correlation coefficients were performed with a 95% CI for each of the 29 questions on the SALQ.
- Overall, regarding the recommendation for referral, there was agreement on 20 of the 21 subjects with an ICC of 0.892 (95% CI 0.733-0.957).

SCREENASSIST LUMBAR QUESTIONNAIRE

Patient Presentation

- 62 year old, white male complains of low back pain with radiation into bilateral buttocks.
- PMH: HTN, hayfever and bilateral knee DJD with right knee arthroscopic surgery
- Medications: Hydrochlorothiazide 25 mg PO, Lisinopril 20 mg PO, Amlodipine 10 mg PO, Colace 100mg PO BID, Naproxen 500 mg PO BID prn pain.
- Diagnostic imaging: radiographs Lumbar spine- DJD.
Patient Presentation

- Current exacerbation began approximately 5 months ago.
- Pain is described as an aching, nagging pain.
- He can not note any specific injury or incident at the onset of the lower extremity pain.
- He has had chronic low back pain for over 10 years.

Using the client presentation, what additional questions should you ask for a thorough systems review?

**QUESTION LIST**
1. **Constitutional** In the last 2 weeks have you had a **Fever**?
   - 0 if none
   - 1 if felt warm but never took temp
   - 2 if recorded a Temp: above normal but < 99.5
   - 3 if recorded a Temp: 99.5 but < 101
   - 4 if recorded a Temp: 101 but < 103
   - 5 if recorded a Temp: 103 or higher

2. **Constitutional** In the last 3 months have you demonstrated **Weight loss**?
   - 0 if none
   - 1 if occurred but expected weight loss associated with current diet
   - 2 if not dieting but losing between 0 to 2% body weight per week
   - 3 if dieting but losing more weight than expected
   - 4 if losing > 2% but ≤ 4% body weight per week irrespective of diet
   - 5 if losing > 4% body weight per week irrespective of diet

3. **Constitutional** In the last 2 weeks have you experienced **Night sweats**?
   - 0 if none
   - 1 if occurred but expected weight loss associated with current diet
   - 2 if not dieting but losing between 0 to 2% body weight per week
   - 3 if dieting but losing more weight than expected
   - 4 if losing > 2% but ≤ 4% body weight per week irrespective of diet
   - 5 if losing > 4% body weight per week irrespective of diet

4. **Constitutional** In the last 4 weeks have you experienced **increased Fatigue**?
   - 0 if none
   - 1 occurs but well explained by lack of sleep or vigorous exercise
   - 2 spontaneously occurs but ≤ 2 times a week
   - 3 if occurs 2 or more times a week but < daily
   - 4 if complains of fatigue daily, but not all day long
   - 5 if constant fatigue

5. **Constitutional** Over the last year have you been compliant with physician recommendations?
   - **Medical compliance self-assessment**
     - 0 if always taking meds and never missing follow up (F/U) appointments
     - 1 if takes meds & keeps F/U visits but does not feel they are necessary
     - 2 if compliant with 75% but < 100% of meds or F/U visits
     - 3 if compliant with 25% but < 75% of meds or F/U visits
     - 4 if compliant with < 25% of meds or F/U visits but does not refuse either
     - 5 if refuses medications and medical F/U visits

6. **Endocrine** Have you ever been diagnosed with **Diabetes mellitus**?
   - 0 if not diabetic
   - 1 if not diabetic but a sibling or parent is
   - 2 controlled (fasting BS < 150 mg/dl or last HA1C<7.5%) & on no medicines for glucose control
   - 3 controlled (fasting BS < 150 mg/dl or last HA1C<7.5%) but on medication for glucose control
   - 4 if keeps F/U visits but fasting BS between 150 to 250 (mg/dl) often or last HA1C between 7.5 to 9.5 %
   - 5 if fasting BS > 250 mg/dl or not checking fingersticks or HA1C>9.5% or no DM F/U visits

7. **Gastrointestinal** Over the last month have you experienced **Vomiting**?
   - 0 if none
   - 1 if vomiting once every 5 days
   - 2 if vomiting not daily but < every 5 days
   - 3 if vomiting daily but ≤ 3 times a day
   - 4 if vomiting > 3 times a day but not constantly vomiting
   - 5 if constantly vomiting

8. **Gastrointestinal** In the last 3 months have you experienced **Heartburn**?
   - 0 if none
   - 1 if having heartburn < 15 minutes a week & not on NSAIDs & not on meds for heartburn
   - 2 if heartburn occurs ≥ 15 minutes/week but < daily & not on NSAIDs & not on meds for heartburn
   - 3 if not on meds for heartburn plus it started after using NSAIDs or if not on NSAIDs, daily but not constant
   - 4 if taking meds to treat heartburn which may be controlled or refractory but not constant heartburn
   - 5 if constant heartburn with or without meds

9. **Gastrointestinal** Over the last 4 weeks has there been a change in **Stool color**?
   - 0 if never had black nor bloody stools
   - 1 if black or bloody stool once in last month
   - 2 if black or bloody stools but occurring > once a month but < once a week
   - 3 if black or bloody stools but occurring ≥ once a week but < every 2 days
   - 4 if black or bloody stools but occurring every 2 days or more frequently but not 5 days in a row
   - 5 if black or bloody stools for 5 days in a row or more

10. **Gastrointestinal** Over the last 4 weeks has there been a change in **Stool volume**?
    - 0 if no change from baseline or actually decreased
    - 1 if client feels > baseline but < 50% increase
    - 2 if client feels 50% to < 100% more than baseline
    - 3 if client feels 100% to < 200% more than baseline
    - 4 if client feels 200% or higher but fully continent
    - 5 if so excessive afraid of continence or if had incontinence

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11. **Genitourinary** Over the last 4 weeks has there been a change in **Stool consistency**?
   1. 0 if unchanged stools or well formed
   2. 1 if one loose stool but occurred over 7 days ago
   3. 2 if one loose stool > 2 days ago but ≤ 7 days ago
   4. 3 if just one loose stool ≤ 2 days ago
   5. 4 if daily loose stool but ≤ 3 loose stools per day
   6. 5 if > 3 loose stools per day

12. **Gastrointestinal** Over the last 3 months has there been a change in **Control of bowels**?
   1. 0 if complete control or longstanding continence problems proven benign by a workup
   2. 1 if new rectal leakage occurs but not more than once a month
   3. 2 if new rectal leakage occurs > once a month but ≤ once a week
   4. 3 if new rectal leakage occurs > once a week but not daily
   5. 4 if daily new rectal leakage but can wear same underwear needed or protective padding used
   6. 5 if daily new rectal leakage & change of underwear needed or protective padding used

13. **Gastrointestinal** Over the last 3 months have you experienced **Constipation**?
   1. 0 if none or unchanged bowel habits
   2. 1 if felt constipated but not more than once a month
   3. 2 if felt constipated > once a month but ≤ once a week
   4. 3 if felt constipated > once a week but not daily
   5. 4 if feeling constipated daily but not taking meds for a bowel movement
   6. 5 if feeling constipated daily & needs meds for a bowel movement

14. **Genitourinary** Over the last 3 months have you experienced **Blood in urine**?
   1. 0 if none
   2. 1 if noted but not more than once a month
   3. 2 if noted > once a month but ≤ once a week
   4. 3 if noted > once a week but not daily
   5. 4 if noted daily but not constantly
   6. 5 if noted with every void

15. **Genitourinary** Over the last 3 months have you experienced a change in **Control of urine**?
   1. 0 if complete control or longstanding continence problems proven benign by a workup
   2. 1 if new episodes of loss of control but not more than once a month
   3. 2 if new episodes of loss of control > once a month but ≤ once a week
   4. 3 if new episodes of loss of control > once a week but not daily
   5. 4 if daily new episodes of loss of control but can wear same underwear throughout day
   6. 5 if daily new episodes of loss of control & change of underwear needed or protective padding used

16. **Genitourinary** Over the last 3 months have you experienced a change in **Urinary frequency**?
   1. 0 if no change from baseline
   2. 1 if increased frequency occurred but not more than once a month
   3. 2 if increased frequency occurs > once a month but ≤ once a week
   4. 3 if increased frequency occurs > once a week but not daily
   5. 4 if increased frequency occurs daily but not constantly
   6. 5 if increased frequency occurs constantly throughout the day

17. **Neurologic** Over the last 4 weeks have you experienced numbness or loss of feeling in your legs? **Frequency of lower extremity change in sensation**
   1. 0 if none
   2. 1 if sensation change < 10 minutes over last month
   3. 2 if sensation change ≥ 10 minutes over last month but < 15 minutes a week
   4. 3 if sensation change ≥ 15 minutes a week but not daily
   5. 4 if sensation change daily but not constant
   6. 5 if constant sensation change

18. **Neurologic** Over the last 4 weeks have you experienced weakness in your legs? **Frequency of lower extremity weakness**
   1. 0 if none
   2. 1 if weakness occurred < 10 minutes over last month
   3. 2 if weakness occurred ≥ 10 minutes over last month but < 15 minutes a week
   4. 3 if weakness occurred ≥ 15 minutes a week but not daily
   5. 4 if weakness occurs daily but not constant
   6. 5 if constant sensation change

19. **Neurologic** If you have had weakness in your legs over the last month does it change your ability to function? **Extent of lower extremity weakness**
   1. 0 if none
   2. 1 if seems weak but no loss of function
   3. 2 if noticing weakness while walking (stopping or shorter distances) but can walk without falling
   4. 3 if noticing weakness will fall while walking or relying on wheelchair or other assisted mobility
   5. 4 if able to move legs but cannot walk nor go from seated to standing
   6. 5 if unable to move lower extremity

20. **Rheumatological** In the last year have you noticed any rashes or skin conditions? **Skin morphology**
   1. 0 if none
   2. 1 if only 1 instance of morphology change & known for > 1 year
   3. 2 if only 1 instance of morphology change but started within last year
   4. 3 if up to 3 morphology changes that are known for > 1 year or 2 new morphology changes within last year
   5. 4 if 4 morphology changes, known for > 1 year or 3 new morphology changes within last year
   6. 5 if all 4 morphology changes that are new within last year
21. **Hematological** Over the last year have you had a history of **Immune suppression**?  
0 if none  
1 currently not immunosuppressed, but will take systemic steroids for ≤ 1 week  
2 currently not immunosuppressed but receives systemic steroids > 2 times a year  
3 currently on systemic steroids or other immunosuppressants, but no transplant history & HIV negative  
4 HIV positive or transplant history  
5 known very low white blood cell count (WBC count < 2) due to medical therapy or illness

22. **Lumbosacral** Over the last 2 weeks have you experienced low back pain during the day? **Lumbosacral daytime pain**  
0 if none  
1 if pain noted but none for > 1 week  
2 if pain occurred ≤ 1 week ago but lasts < 1/2 of the day  
3 if pain occurred ≤ 1 week ago but lasts ≥ 1/2 of the day will resolve without analgesics  
4 if constant pain but resolves with analgesics  
5 constant pain, uncontrolled with analgesics

23. **Lumbosacral** Over the last 2 weeks have you experienced low back pain making it difficult to sleep? **Lumbosacral night time pain**  
0 if none  
1 able to sleep entire night once a comfortable position is found  
2 pain awakens due to positional change, but able to fall back asleep  
3 awaken often without attributing to positional change, can fall back asleep  
4 if having pain but able to sleep with analgesics  
5 constant pain, uncontrolled with analgesics

24. **Lumbosacral** Over the last week has the pain ever gone into your buttock or leg? **Lumbosacral extent of pain referral**  
0 if no lumbosacral pain  
1 if lumbosacral pain, never referred  
2 pain refers away from back but < one instance a week  
3 pain refers away from back ≥ once a week but not daily  
4 if pain refers away from back daily but can resolve with positional change  
5 if pain refers away from back daily and cannot resolve with positional change

25. **Lumbosacral** Is your pain sharp or dull? Do medications help with the pain? **Lumbosacral quality of pain**  
0 if none  
1 if dull & no analgesics needed  
2 if dull & analgesics are used for relief  
3 if sharp & no analgesics are used  
4 if sharp & analgesics are used for relief  
5 if uncontrolled with analgesics, either dull or sharp

26. **Lumbosacral** Can you get into a position that relieves or lessens your pain? **Lumbosacral pain relieving factors**  
0 if no lumbosacral pain  
1 if stopping aggravating activity relieves pain  
2 must sit to relieve the pain  
3 only laying down relieves pain  
4 must sit & forward flex to relieve pain  
5 unable to relieve pain with change in position

27. **Lumbosacral** Are there activities of positions that increase your low back pain? **Lumbosacral pain precipitating factors**  
0 if no lumbosacral pain  
1 if worse only after clearly overusing back  
2 if worse after activities which used to be tolerable  
3 if worse after standing or walking but not immediately  
4 if worse simply upon standing or walking, or worse after laying down  
5 constant uncomfortable pain

28. **Lumbosacral** Can you recall an activity that initiated your low back pain? **Lumbosacral trauma**  
0 if no lumbosacral pain  
1 gradual onset of pain without known incident  
2 if after known incident and client felt medical care was not necessary and no medical evaluation performed 3 if after known incident and client sought medical care > 24 hours after known incident  
4 if after known incident and client sought medical care ≤ 24 hours after known incident  
5 if no trauma or precipitating event but sudden onset severe pain

29. **Lumbosacral** Have you had any tingling, itching or burning sensations in your back or legs? **Lumbosacral paresthesia**  
0 if no lumbosacral paresthesia  
1 if localized to area of pain  
2 if paresthetic in only one dermatome  
3 if paresthetic to two ipsilateral dermatomes  
4 if paresthetic in three ipsilateral dermatomes  
5 if contralateral lower extremity or bilateral lower extremity paresthesia
If the individual scored a 5 on any of the following questions, consider transfer to emergency medical care.

1 3 7 9 12 14 15 16 19 23 28

If the individual scores a 5 on 2 or more of the following questions, consider referral to a physician or alternate primary care provider immediately, urgent care or to emergency care.

8 10 22 24 25 26 27 29

If the individual scores a 3 or higher on 3 of the questions, consider referral to a physician or alternate primary healthcare provider for consult within 48 hours.

1 2 3 4 7 8 9 10 11 12 13 14 15 16 17 18 19 23 29
Medical Screening for the Lumbar Spine

Case Study

Subjective/ history: 62 year old, white male complains of low back pain with radiation into bilateral buttocks. Current symptoms began approximately 5 months ago. Pain is described as an aching, nagging pain. He can not note any specific injury or incident at the onset of the lower extremity pain. He has had chronic low back pain for over 10 years. At retirement from the Army, he was diagnosed with lumbar spine degenerative disc disease. This is the second incident of pain going into bilateral buttock area in the last 5 years. The first incident was treated with traction, ultrasound and electrical stimulation at a local therapy clinic. He also saw a chiropractor for adjustments at that time. Symptoms relieved in approximately 3 months.

He currently works as a grounds keeper at the library since retiring from the military 10 years ago. He works approximately 4 hours a day. Work activities include mowing 6 acres, pulling weeds, trimming hedges and cleaning sidewalks. Low back pain does increase with lifting, bending and stooping but not enough to make the client stop the activity. By the end of the day, when the client tries to relax, symptoms increase in bilateral legs. Pain travels equally in both legs and continues until next morning. When he wakes in the morning, low back pain and bilateral leg symptoms have decreased but are still present. X rays were repeated 5 months ago by his orthopedic surgeon and patient was again diagnosed with degenerative disc disease and arthritis of the spine.

He is currently taking Naproxen which seems to be helping his low back pain. Other medical history includes HTN, hayfever and bilateral knee DJD with right knee arthroscopic surgery 2 years ago. His father died at 80 years of a heart attack and his mother passed away at 75 years due to “old age.” Family history of liver cancer.

He reports he drinks plenty of water during the day. He has been attempting to lose weight by decreasing soda and sugar intake. He has lost 30 pounds in the last 2 months getting down to 270 pounds. He does have 3-4 beers in the evening when watching sports after work. He was a pack a day smoker for approximately 25 years but quit 10 years ago.

Medications: Hydrochlorothiazide 25 mg PO, Lisinopril 20 mg PO, Amlodipine 10 mg PO, Colace 100mg PO BID, Naproxen 500 mg PO BID prn pain.

Observation: Older male with large abdomen. No difficulty with mobility. Very good historian of events.

Inspection: General loss of lumbar spine lordosis in both sitting and standing. No scoliosis, lateral shift, step, muscle hypertrophy or atrophy noted.

Active Range of Motion: Lumbar spine extension limited 50% but pain free. Flexion WNL but resulted in a pulling sensation along lumbar spine musculature. Sidebending right caused a pulling sensation on the left. Sidebending left caused a pulling sensation on the right.
Passive Range of Motion: Same as active rom

Resisted Range of Motion: Strong in 3 planes with no reproduction of symptoms flexion, extension, and sidebending.

Palpation: Atrophy noted throughout lumbar spine musculature. No tenderness elicited.

Neurological: Compression in flexion resulted in a pressure type feeling in lumbar spine. Positive bilateral straight leg raise at 50 degrees with significant hamstring tightness noted. Myotones, dermatones and reflexes intact.

Joint mobility: general loss of extension throughout the lumbar spine without symptoms. Flexion L5 on S1 did cause a pulling sensation bilateral buttock.

Segmental: Shearing positive L4 on L5 and L5 on S1.