Medical Screening for the Orthopedic Physical Therapist

Medical Screening

- APTA’s Guide to Practice Definition
  - Identify problems that may require referral or consultation with other medical care providers
  - This requires a skill in differential diagnosis

Differential Diagnosis

- In physical therapy ...
  - A label, impression, or analysis resulting from our examination that culminates in a classification of the impairments reflecting our values and judgment (evaluation) regarding the patient’s presentation
  - Allows us to render a prognosis and decide whether or not the patient is in the “right” place for care

How is medical screening congruent with the APTA’s 20/20 Vision?

- Imperative skill if we desire direct and unrestricted access
- Enhances our professional ability to refer to other health care providers
- Gives professional credence to our ability to refer for diagnostic tests

Medical Screening Myths

- It’s the physician’s job
- We need to because physicians “miss things”
- It’s a new responsibility
- Only important for direct access patients
- Low priority: “I’ve never had a patient with cancer”
- All of the screening must take place during the initial visit
- The screening ends when the initial evaluation is completed
- “I don’t have enough time”

What are we screening for?

- Medical conditions yet to be diagnosed
  - responsible for symptoms
  - not responsible for symptoms
- Existing clinically stable medical conditions
- Existing clinically unstable medical conditions
General Screening
Looking for Flags

**Red Flags**
Findings of symptoms or conditions that may require immediate attention and supersede the PT being the primary provider of service. Red flags are often indicative of non-mechanical (non-neuromusculo-skeletal) conditions or pathologies of visceral origin.

**Yellow Flags**
Risk factors or findings that are potential confounding variables which are cautionary warnings regarding the patient’s condition and that could have an impact on the patient’s prognosis and/or outcome. These findings should alert the PT to slow down or monitor the influence of the finding.

Are Physical Therapists Capable?

**METHODS:** A survey of 304 members of the Private Practice section of the APTA included 12 hypothetical case scenarios. For each case, participants determined whether they would provide intervention without referral, provide intervention and refer, or refer before intervention.

**RESULTS:**
- 97% correct for musculoskeletal conditions
- 88% correct for non-critical medical conditions
- 79% correct for critical medical conditions.
- Approximately 50% made correct decisions for all cases within each group.
- The odds of making 100% correct decisions if OCS = 2.03 (95% CI = 1.65 - 2.47) for musculoskeletal conditions.
- 1.80 (95% CI = 1.46 - 2.20) for critical medical conditions.

**DISCUSSION AND CONCLUSION:** PT, OCS were almost twice as likely to make correct decisions for critical medical and musculoskeletal conditions.

Jette DJ, Phys Ther, 2006

PT Scope of Practice Responsibility
- Routinely screen on a systems basis
- If findings are suspicious or require diagnostic knowledge, skill, or equipment outside the PT’s scope of practice they should inform the patient of the need
- Inform the patient of concerns and make referral recommendations for necessary additional services

Communicating Concerns to Referral Source or Medical Provider
- List observed cluster of signs/symptoms that have raised your concern
- After listing the findings of concern, state the following
  - “These findings do not seem consistent with the types of neuromusculoskeletal problems that I typically treat.”
- Finish with an “open-ended” question
  - How should we handle this?
  - How should we proceed?
  - Would you like me to refer this patient?

Medical Screening for Physical Therapists
You don’t have to diagnose the problem ... but you must recognize if the problem or comorbidities present are outside the scope of our practice act

Medical Responsibility
- Deciding which medical tests to run, formulating a medical diagnosis, or ruling out non-mechanical conditions is the responsibility of the physician
Common Sense Principles of Screening

- You don’t see what you don’t look for
- You don’t hear what you don’t ask about

Easy to have a myopic perspective from a tunnel vision view

Evaluate and treat the patient – not the pathology

Components of the Screening Exam

- Identify patients at risk
- Identify atypical signs/symptoms
- Correlate signs/symptoms
  - Be careful not to assume all dysfunction is of musculoskeletal origin
- Review all systems
- Communicate clinical findings of concern
  (not suggest a specific visceral disease)

Self-Report Medical History Screening Tool Reliability

- 90-100% (mean 94.5%) agreement on items marked at repeat assessment 5 days later
- 90-100% (mean 95.5%) agreement with face-to-face interview and self-report questionnaires

Boissonnault WG, JOSPT, 1993
While this may be true ... was there anything else unusual about the patient’s presentation that would make you think the pathology is not musculoskeletal in origin?

In other words ... if it doesn’t look like, walk like, talk like, or act like a …

so, how do you get all this information when you only have 30-45 minutes to do an initial eval?

Do the findings of your review commonly result in referral?

- Patients with LBP: primary care settings
  - 4% osteoporotic compression fracture
  - 2% visceral disorders
  - <1% traumatic fracture
  - <1% neoplasms
  - <1% inflammatory arthritis
  - <0.01% infection


Likelihood of Co-morbidities in OP Setting
Boissonnault WG, J Orthop Sports Phys Ther, 1999
Cancer Screening

- Changes in bathroom habits
- Sore that does not heal
- Unusual discharge and bleeding
- Thickness or lumps in the breast or other places
- Indigestion and difficulty in swallowing
- Bizarre changes in moles or warts
- Ageing cough and hoarseness

Cancer Screening with Low Back Pain

- No history of cancer
- Under 50 years old
- No recent weight loss
- Some improvement with conservative care

Likelihood of Co-morbidities in OP Setting

Boissonnault WG, J Orthop Sports Phys Ther, 1999

- Previous study in 1993 of 10 Minnesota OP clinics revealed the following big 3 medical screening findings
  - Hypertension
  - Arthritis
  - Depression

Likelihood of Co-morbidities in OP Setting

Boissonnault WG, J Orthop Sports Phys Ther, 1999

- Hypertension Prevalence
  - Prevalence: 50 million Americans (more than 30% are undiagnosed)
  - Prevalence Rate = 1 in 5 (18%)
  - Need to monitor before implementing any exercise program

Prevalence of Hypertension by Gender/Age Group in the U.S.A.

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-34</td>
<td>12%</td>
<td>3%</td>
</tr>
<tr>
<td>35-44</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>45-54</td>
<td>37%</td>
<td>33%</td>
</tr>
<tr>
<td>55-64</td>
<td>51%</td>
<td>58%</td>
</tr>
<tr>
<td>65-74</td>
<td>68%</td>
<td>73%</td>
</tr>
<tr>
<td>&gt;75</td>
<td>71%</td>
<td>85%</td>
</tr>
</tbody>
</table>

Source: National Center for Health Statistics

Major Depressive Disorder

- Prevalence: women, 10% to 25%; men, 5% to 12%
- 20% to 25% of individuals with diabetes, stroke, myocardial infarction, cancer
- Up to 15% of those with a major depressive disorder will commit suicide
- Often triggered by change in social, work, functional status
- Negative impact on rehabilitation
**Major Depressive Disorder Criteria**

At least 5 symptoms present most of the day, daily for at least 2 wks.
- For periods of bereavement, more than 2 months
- Symptoms cause significant functional distress or impairment at home, at work, socially, at school, and in rehabilitation

1. Depressed mood
2. Markedly diminished interest or pleasure in almost all activities
3. Significant weight loss or gain
4. Insomnia or hypersomnia
5. Psychomotor agitation/retardation
6. Fatigue
7. Thoughts of death or suicide
8. Feelings of worthlessness
9. Impaired concentration
10. Recurrent

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**Follow-Up to the Patient’s Self-Report Medical History**

- Surgery (other than reason for referral)
  - When?
  - Type?
  - Reason for?
  - Outcome/Prognosis?
  - Current limitations

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**Depression Screening**

1. During the past month how often have you been bothered by feeling down, depressed, or hopeless?
2. During the past month have you been bothered by little interest or pleasure in doing things?

Affirmative answer to both is 97% sensitive and 67% specific for the presence of depression

Negative LR of 0.05
- highly significant

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**Follow-Up Questions from the Medical History**

- Any illness or diseases reported
  - Current vs. Past
    - (if past, when diagnosed, how treated and resolved?)
  - If Current?
    - What type?
    - Manifestations?
    - Treatment? Prognosis?
    - Next MD follow-up?
    - How illness impacts chief complaint

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**Follow-Up Questions from the Medical History**

- Family History
  - Who?
  - What types?
  - Age at diagnosis
  - Current health status?
Follow-Up Questions from the Medical History

- Medications
  - Taking for what?
  - How long on medication?
  - Dosage level/schedule
  - Helping?
  - Side effects?
  - OTCs and/or herbals?

Smoking?

- If so, record their pack-year history (number of packs/day x # of years smoked)

- Known negative prognostic influences:
  - Retards bone and soft tissue to healing
  - Narrows blood vessels and reduces tissue oxygenation capacity
  - Raises blood pressure
  - Accelerates disc degeneration
  - Lower functional outcomes and higher pain scores
  - Reduces exercise tolerance

Substance Abuse

- Alcohol Intake
  - Excess could have impact on pain perception, nutritional intake, bone metabolism, medication value, and balance
  - Associated with polyneuropathies, myopathies, and osteonecrosis

- Alcohol Screening Tools
  - CAGE Questionnaire
    - C – Have you ever thought you should cut down on your drinking?
    - A – Have you ever been annoyed by criticism of your drinking?
    - G – Have you ever felt guilty about your drinking?
    - E – Do you ever have an eye-opener (a drink or two) in the morning?
  - Sensitivity = .93 and specificity = .76 with a cut point of >2
  - Bernadt MW, Lancet, 1982

Substance Abuse

- Alcohol intake
  - Quantity not associated with diagnosis of chemical dependency
  - At-risk drinking:
    - adult males, >14 drinks per week or >4 drinks per sitting
    - adult females, >7 drinks per week or >3 drinks per sitting

S/S of Alcohol Withdrawal

- Agitation and Irritability
- Headache
- Insomnia
- Anorexia, nausea, vomiting, diarrhea
- Loss of balance; incoordination
- Seizures (12-48 hours after last drink)
- Delirium Tremors (2-3 days after last drink)
- Motor hyperactivity, tachycardia
- Elevated blood pressure
Health Screen Physical Exam

Should perform on ALL patients at first visit to identify potential health problems not necessarily associated with the reason for the PT visit – In essence doing a general screening for all body systems, multi-system illnesses, and systemic illnesses – As suggested by the APTA’s Guide to practice - an assessment of the anatomic and physiologic status of 1) cardiovascular/pulmonary, 2) integumentary, 3) musculoskeletal, and 4) neuromuscular systems – Assessment of communication abilities

Cardiovascular and Pulmonary Vitals

- Heart rate (adults): 60 to 100 beats per min – May be slightly lower in well-conditioned athletes
- Normal respiratory rate (adults): – 15 to 20 breaths per minute – < 12 or > 25 abnormal

Blood Pressure Response to Exercise

- Systolic BP should rise ~ 10 mmHg with each MET increase in activity
- Diastolic BP should remain the same or slightly decrease with physical activity
- Medical consultation encouraged if resting BP is > 140/90 – particularly if accompanied by lightheadedness, syncope, mental/visual blurring, and/or sense of weak or “rubbery legs”
- Urgent medical referral if: – Elevated BP of > 200/110 or systolic pressure < 80 or diastolic pressure > 100 – Low BP with any alterations in mentation

Body Type

Height/Weight
- Ectomorph: characterized by long and thin muscles/limbs and low fat storage. These are you lean, lightweight athletes who perform best at distance sports requiring muscle endurance.
- Endomorph: characterized by large bones, solid torso, higher fat levels, wide shoulders with a narrow waist. These are your heavier athletes who naturally carry more body fat and do best in sports requiring power, and body weight force.
- Mesomorph: characterized by increased fat storage, a wide waist and a large bone structure. These are your naturally muscular athletes, who have low body fat and excel in sports requiring strength and power.

Body Mass Index

<table>
<thead>
<tr>
<th>Category</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severely Underweight</td>
<td>&lt; 16.5</td>
</tr>
<tr>
<td>Underweight</td>
<td>16.5 - 18.4</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5 - 24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>25 - 29</td>
</tr>
<tr>
<td>Obesity Class I</td>
<td>30 - 34.9</td>
</tr>
<tr>
<td>Obesity Class II</td>
<td>35 - 40</td>
</tr>
<tr>
<td>Obesity Class III</td>
<td>&gt; 40</td>
</tr>
</tbody>
</table>
% Body Fat

**ADULTS**

<table>
<thead>
<tr>
<th>Status</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>At increased risk</td>
<td>&lt; 5%</td>
<td>&lt; 10%</td>
</tr>
<tr>
<td>Lean, low risk</td>
<td>5 - 15%</td>
<td>10 - 23%</td>
</tr>
<tr>
<td>Healthy range, upper end</td>
<td>&lt; 20%</td>
<td>&lt; 25%</td>
</tr>
<tr>
<td>Moderately over fat, moderate risk</td>
<td>20 - 24%</td>
<td>25 - 31%</td>
</tr>
<tr>
<td>Excessively over fat, high risk</td>
<td>&gt; 25%</td>
<td>&gt; 30%</td>
</tr>
</tbody>
</table>

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**General Health Screening**

- **Fatigue**
  - Sense of tiredness or weariness marked by a change in ability to carry out normal daily activities
  - Duration of 2 or more weeks

- **Malaise**
  - Sense of lethargy; impending illness
  - Patient’s intuition; something “isn’t right”

- **Fever, chills, sweats**
  - 99.5°F (37.5°C) or higher for > 2 wks.
  - As a rule, a fever of 102°F or higher warrants a call to the physician
  - Elderly: 98.9°F (37.2°C) or an increase of 1.3°C over baseline

- **Nausea**
  - Sensation of unease and discomfort in the upper stomach and head with an urge to vomit.
  - Duration 1 to 2 weeks or longer

- **Unexplained weight change**
  - Unintentional 5% to 10% body weight change over less than a 4-week period

- **Paresthesias, numbness, or weakness**
  - Nondermatomal
  - Multiple spinal nerve root levels
  - Multiple peripheral nerve distribution from multiple spinal nerve root levels
  - More than one extremity
General Health Screening cont-
- Dizziness, lightheadedness
  - Postural hypotension
  - > than 20/10 mm hg drop form supine to standing
  - Positional Vertigo
  - Patient spinning versus room spinning
  - Motion sickness or sensitivity
- Mentation or cognitive deficits
  - Based on observation; corroborate with family/caretakers

If “yes”, what now ?....
- Is there an explanation?
- Has patient mentioned it to a physician?
- If yes, has it worsened?

so, what are some red flags in the patient’s medical history that we should be alert for?

General Screening Alarms
- MEDICAL HISTORY
  - History of Cancer (personal or familial)
  - Unwarranted general fatigue/malaise
  - Unintended weight loss or loss of appetite
  - Recent infection, illness, or constitutional symptoms
  - Immunosuppression
  - Injection drug use
  - Altered Vital Signs (BP, HR, PR, body temp)
  - Fever/Night Sweats
  - Unresolved Night Pain (with repositioning)

General Principles of Screening
- Clinical Presentations of Potential Concern:
  - Symptoms unaltered by exam or intervention (for better or worse)
  - Symptoms unaltered or inconsistent with specific positions/postures
  - Unexplained symptoms (swelling, paresthesias, weakness, tone alteration) - particularly if you have experience with this pathology
  - Significant, unintended weight loss or gastrointestinal disturbances
  - Cardiovascular Changes (SOB, chest pain, pulsatile findings)
  - Bowel/Bladder Change or Dysfunction
  - Palpable, growing mass
  - Skin/Nail Changes
  - Unknown etiology with insidious onset
  - Diminishing symptomatic relief value from previously effective remedies
  - Disproportionate symptoms
  - Symptoms do not fit in typical or recognizable pattern

Red Flag Abnormal PAIN Symptoms
- Pain despite full passive ROM
- Pain inconsistent with emotional or psychological status
- Nocturnal pain (sleep interruption)
- Constant and/or poorly localized pain
- Severe, unremitting, or unusual pain

Red Flag Abnormal NEURAL Presentations
- Altered mental status
- Altered attentiveness (drowsy, lethargic, sleepy)
- Blurred vision, altered speech, hearing deficits
- Difficult swallowing
- Headache
- Balance/Coordination deficits or altered DTRs
**Yellow Flag** Abnormal Findings

- Substance abuse
  - alcohol, tobacco, drugs, medications
- Age
- Somatotype (BMI, % body fat, body shape)
- Gender – Race – Ethnicity
- Lifestyle (sexual, travel, exercise)
- Occupational Status
- Attitude/Medical Prejudice/Compliance-Interest

**Algorithm for Identifying Red Flags in patients presenting with Orthopedic Spine Conditions**

**Categorical Classification of Red Flag Findings during Medical Screens**

**CATEGORY I**: FACTORS that REQUIRE IMMEDIATE ATTENTION
- Phallicogical or other changes
- Patterns of Symptoms not compatible with mechanical pain
- Blood in Spinal Fluid
- Onset of neurological deficit
- Painful abdominal masses
- Neurological findings not explained by neoplasia
- Elevated sedimentation rate

**CATEGORY II**: FACTORS that REQUIRE FURTHER SUBJECTIVE QUESTIONING or REPLY CONTRAINDICATIONS to MANUAL THERAPY
- Weight Loss
- Non-healing wounds/scores
- Fever
- Gait defects
- Cancer, Traumatic/Neurological/Infection, Metabolic Bone Disease, or Unexplained Weight Loss History
- Long-term Corticosteroid Use
- Age > 50
- Duration for current impairment or Long-term Worker’s compensation

**CATEGORY III**: FACTORS that REQUIRE FURTHER TESTING AND DIFFERENTIATION ANALYSIS
- Bilateral or Unilateral Radiculopathy/Paresis
- Unexplained significant LE or UE weakness
- Abnormal Reflexes

**Systemic Pain**
- Disturb sleep
- Deep aching or throbbing
- Reduced by pressure
- Constant waves of pain
- Not aggravated by mechanical stress

Associated with:
- Jaundice
- Migratory arthralgia
- Skin rash
- Fatigue/Weight Loss
- Low-grade fever
- Generalized weakness
- Cyclical and progressive symptoms
- Tumors
- History of infection

**Musculoskeletal Pain**
- Generally worse at night
- Sharp or superficial ache
- Usually decreases with cessation of activity
- Usually continuous or intermittent
- Aggravated by mechanical stress

**Disclaimer**

- This is not a comprehensive list of findings that should concern the physical therapist during the initial evaluation or medical screening
- Other findings could also indicate the need for additional medical evaluation
- No single finding automatically requires an immediate response but the cluster of findings should be judged in the context of the patient’s overall presentation and current health concerns

**Health Screen Physical Exam continued**

- Inspection/Observation
- Palpation
- Neuro Screen
Inspect/Observed

- Inspect for dermal changes
  - Vasomotor changes – skin color and temperature
  - Sudomotor changes – excessive sweating or dry skin
  - Pilemator changes – goose bump response
  - Trophic changes – hair, skin, and nail changes
- Observe for obvious asymmetry
  - Atrophy, swelling, or malalignment

Palpate/Neuro Screen

- Palpate pulses
- Palpate lymph nodes
- Unusual, growing masses
- Assess coordination
- Dermatomal and Myotomal Screen
- DTRs

LE Dermatomal Sensory Testing

- L2 – Mid Anterior Thigh
- L3 – Medial Femoral Condyle
- L4 – Medial Malleolus
- L5 – Dorsum 3rd MTPJ
- S1 – Lateral Heel
- S2 – Popliteal Fossa

LE Myotomal Muscle Testing

- L2 – Hip Flexion
- L3 – Knee Extension
- L4 – Ankle Dorsiflexion
- L5 – Big Toe Extension
- S1 – Ankle Eversion
- S2 – Knee Flexion

LE Deep Tendon Reflex Testing

- L4 – Patellar Tendon
- L5 – Posterior Tib
- S1 – Achilles Tendon

GRADING
- 0: Absent
- 1+: Diminished
- 2+: Normal
- 3+: Hyperactive
- 4+: Clonus

UE Dermatomes

- C4 – Shawl area
- C5 – Lateral Deltoid
- C6 – Posterior Thumb
- C7 – Posterior distal 3rd finger
- C8 – ulnar pinkie
UE Myotomal Muscle Testing

- C4 - shoulder shrug
- C5 - shoulder abduction
- C6 - elbow flexion/wrist extension
- C7 - elbow extension/wrist flexion
- C8 - thumb extension
- T1 - finger abduction

UE Deep Tendon Reflex Testing

- C5 Biceps
- C6 Brachioradialis
- C7 Triceps

**GRADING**
- 0 Absent
- 1+ Diminished
- 2+ Normal
- 3+ Hyperactive
- 4+ Clonus

Next, let’s review visceral pain patterns

**Atypical Signs/Symptoms**
(non-orthopedic visceral/somatic pain characteristics)

- **Location**
  - can be misleading; may be more prone to migrating or alternating pain sites
- **History**
  - usually atraumatic in origin
- **Behavior**
  - the frequency, duration, and intensity of symptoms not as sensitive to posture or activity level
  - Does not respond to typically effective interventions

Clinically Significant Organs of the Upper and Lower Quadrants

- **Upper Right Quadrant**
  - Liver
  - Gallbladder
  - Right Lower Lung
  - Diaphragm

- **Upper Left Quadrant**
  - Stomach
  - Spleen
  - Lower Intestine
  - Lung/Diaphragm

- **Lower Right Quadrant**
  - Lower Intestine
  - Appendix

- **Lower Left Quadrant**
  - Lower Bowel
  - Descending Colon
  - Abdominal Aorta

General Principles of Visceral Pain

- Visceral pain is dull and non-specific when it is referred but it can be very specific and sharp when it is localized
- Any disease or involved organ that is touching the diaphragm can refer to the shoulder or lower neck
### Location of Atypical Signs/Symptoms for Pelvic Organs

<table>
<thead>
<tr>
<th>Structure</th>
<th>Segmental Innervation</th>
<th>Possible Areas of Pain Referral/Local Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterus</td>
<td>T10-L1, S2-4</td>
<td>Lumbosacral junction, Sacral area, Thoricolumbar</td>
</tr>
<tr>
<td>Ovaries</td>
<td>T10-11</td>
<td>Lower abdominal, Sacral area</td>
</tr>
<tr>
<td>Testes</td>
<td>T10-11</td>
<td>Lower abdominal, Sacral area</td>
</tr>
</tbody>
</table>

### Location of Atypical Signs/Symptoms from Urogenital/Retroperitoneal Region

<table>
<thead>
<tr>
<th>Structure</th>
<th>Segmental Innervation</th>
<th>Possible Areas of Pain Referral/Local Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kidney</td>
<td>T10-L1</td>
<td>Lumbar spine (sustained), Lower abdominal, Upper abdominal</td>
</tr>
<tr>
<td>Ureter</td>
<td>T11-L2, S2-4</td>
<td>Genit, Upper abdominal, Suprapublic, Lower sacral, Thoricolumbar</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>T11-L2, S2-4</td>
<td>Sacral, genit, Suprapublic, Thoricolumbar</td>
</tr>
<tr>
<td>Prostate gland</td>
<td>T11-L1, S2-4</td>
<td>Sacral, Testes, Thoricolumbar</td>
</tr>
</tbody>
</table>

### Location of Atypical Signs/Symptoms from Digestive System Organs

<table>
<thead>
<tr>
<th>Structures</th>
<th>Segmental Innervation</th>
<th>Possible Areas of Pain Referral/Local Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esophagus</td>
<td>T4-6</td>
<td>Substernal and upper abdomen</td>
</tr>
<tr>
<td>Stomach</td>
<td>T6-10</td>
<td>Upper abdominal, Middle - lower thoracic spine</td>
</tr>
<tr>
<td>Small intestine</td>
<td>T7-10</td>
<td>Middle thoracic spine</td>
</tr>
<tr>
<td>Pancreas</td>
<td>T6-10</td>
<td>Upper abdominal, Lower thoracic spine</td>
</tr>
<tr>
<td>Gallbladder</td>
<td>T7-9</td>
<td>Right upper abdominal, Right middle and lower thoracic spine, including caudal aspect, scapula</td>
</tr>
</tbody>
</table>

### Location of Atypical Signs/Symptoms from Digestive System Organs continued -

<table>
<thead>
<tr>
<th>Structures</th>
<th>Segmental Innervation</th>
<th>Possible Areas of Pain Referral/Local Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver</td>
<td>T7-9</td>
<td>Right middle and lower thoracic spine</td>
</tr>
<tr>
<td>Common bile duct</td>
<td>T6-10</td>
<td>Right middle, Middle thoracic spine</td>
</tr>
<tr>
<td>Large intestine</td>
<td>T11-L1</td>
<td>Lower abdominal, Middle lumbar spine</td>
</tr>
<tr>
<td>Sigmoid colon</td>
<td>T11-L2</td>
<td>Upper sacral, Suprapublic, Left lower quadrant of abdomen</td>
</tr>
</tbody>
</table>

### Location of Atypical Signs/Symptoms from Cardiopulmonary System

<table>
<thead>
<tr>
<th>Structures</th>
<th>Segmental Innervation</th>
<th>Possible Areas of Pain Referral/Local Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart</td>
<td>T1-5</td>
<td>Cervical anterior, Upper thoracic, Left upper extremity</td>
</tr>
<tr>
<td>Lungs and bronchi</td>
<td>T5-6</td>
<td>Ipsilateral thoracic spine, Cervical (diaphragm involved)</td>
</tr>
<tr>
<td>Diaphragm (central portion)</td>
<td>C3-5</td>
<td>Cervical spine</td>
</tr>
</tbody>
</table>

### Review

- **Diaphragm, Pericardium, Heart, and Lung**
- **Heart**
- **Digestive tract**
- **Liver and Gall Bladder**
- **Kidney and Ureter**
Which Systems to Screen by Regional Body Part

**L/R shoulder pain**
- Cardiovascular
- Pulmonary
- Gastrointestinal

**Thoracic spine pain**
- Cardiovascular/peripheral vascular
- Pulmonary
- Gastrointestinal
- Urogenital (T-L junction)

**R/L knee pain**
- Peripheral vascular

**Lumbopelvic pain**
- Gastrointestinal
- Urogenital
- Peripheral vascular

**Inconsistent symptomatic pattern**
- Psychologic
- Endocrine
- Neurologic
- Rheumatic

Systems Review

- Cardiovascular
- Pulmonary
- Gastrointestinal
- Urogenital
- Endocrine
- Integumentary System
- Nervous System

Cardiovascular System Screen Indicated if:

- History (personal or familial) of cardiac or vascular problems
- Pain complaints: chest, L/R shoulder girdle/UE, midthoracic, epigastric regions
- If the patient has significant risk factors for cardiac disease (smoking, poor diet, stress, diabetes); then pain complaints: neck, shoulder, jaw, teeth
- Any symptoms = claudication or pain with exertion
- Abnormal vitals (particularly altered PR or BP)

S/S or Complaints/Concerns of Cardiovascular System Screen

- Dyspnea (difficulty breathing)
- Orthopnea (shortness of breath when lying supine)
- Palpitations (conscious awareness of abnormal heart beat)
- Syncope (partial or complete loss of consciousness with interruption of awareness)
- Peripheral edema
- Cough
- Chest pain/pressure with exertion
- Excessive fatigue

Cardiovascular Red Flag Presentation in the Knee, Leg, Ankle

**Deep Vein Thrombosis**
- Calf pain, tenderness, warmth
- Symptoms increased with standing/walking and alleviated with rest/elevation
- Recent surgery, pregnancy, trauma, or prolonged bed rest
What is the common physical exam test used to detect the presence of a DVT?

**New Gold Standard**

*based on venography studies*

**Clinical Decision Rule**

Wells, et al, 1997

9 medical history and physical exam findings that categorize a patient as low, moderate, or high risk

<table>
<thead>
<tr>
<th>Clinical Finding</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active cancer (within 6 months of diagnosis or palliative care)</td>
<td>3</td>
</tr>
<tr>
<td>Recent (≤ 1 month) or remote (≥ 1 month) immobilization of lower extremity</td>
<td>2</td>
</tr>
<tr>
<td>Hospitalization for ≥ 3 days or major surgery within 30 days of symptom onset</td>
<td>2</td>
</tr>
<tr>
<td>Recent unprovoked VTE</td>
<td>1</td>
</tr>
<tr>
<td>History of DVT or PE</td>
<td>1</td>
</tr>
<tr>
<td>Unprovoked PE with contralateral calf swelling</td>
<td>1</td>
</tr>
<tr>
<td>Unilateral calf swelling</td>
<td>-1</td>
</tr>
</tbody>
</table>

**Wells, et al, 1997**

9 medical history and physical exam findings that categorize a patient as low, moderate, or high risk

- **Variables Assessed**
  1. Male Gender
  2. Paralysis or Immobilization of Lower Limb
  3. Confinement to bed > 3 days
  4. Lower Limb Enlargement
  5. Unilateral Lower Limb Pain
  6. Other diagnosis not plausible

**Predictive Ability**

- **>3** 60-80% possibility
- **1-2** 30% possibility
- **< 0** 5% possibility


During screening examinations – what type of diagnostic accuracy is most important for any type of “special test”? **Sensitivity and Negative Likelihood Ratios**

**WHY?**

- False negatives
  - You want your screening tests to be accurate particularly with serious disorders or disease
- False Positives
  - Patient doesn’t mind hearing “well the tests suggest you had the pathology but the truth is you don’t”
General Interpretative Utility of Diagnostic Tests

- Used in the **beginning** of the exam as a screen
  - Tests with known high sensitivity used to rule out the presence of a disease or injury
- Used **later** in the exam as “icing on the cake”
  - Tests with known high specificity to verify the source of the disease or injury

**Peripheral Arterial Occlusive Disease (PAD)**
- Typically over 60
- Type II Diabetes
- Smoking History
- Sedentary Lifestyle
- Intermittent Claudication
  - “Cool” extremity
  - Pedal pulses diminished
  - Abnormal ABI (ankle-brachial index)

**ABI Assessment**
- The ankle’s systolic pressure is the numerator and the arm’s is the denominator

**ABI Indicators of Peripheral Arterial Disease**

<table>
<thead>
<tr>
<th>ABI Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 – 1.3</td>
<td>normal</td>
</tr>
<tr>
<td>.80 – 1.0</td>
<td>mild peripheral arterial occlusive disease</td>
</tr>
<tr>
<td>.50 – .80</td>
<td>moderate peripheral arterial occlusive disease</td>
</tr>
<tr>
<td>&lt; .50</td>
<td>severe peripheral arterial occlusive disease</td>
</tr>
<tr>
<td>&lt; .20</td>
<td>ischemic or gangrenous extremity</td>
</tr>
</tbody>
</table>

**Screening for PAD using Ankle-Brachial Index**

- To test for claudication, your doctor should first check the pressure at the top of each foot and the inside of each ankle. If these pulses aren’t robust, the doctor should perform an ankle-brachial index test, which compares the blood pressure in your arm with the pressure of your ankle. An abnormal ABI can confirm the diagnosis and identify the specific anomalies.

**The feet beat**

To test for claudication, your doctor should first check the pressure at the top of each foot and the inside of each ankle. If these pulses aren’t robust, the doctor should perform an ankle-brachial index test, which compares the blood pressure in your arm with the pressure of your ankle. An abnormal ABI can confirm the diagnosis and identify the specific anomalies.
To differentiate 
neurogenic
from vascular claudication use the Treadmill Walking Test.

2 mph on 12% grade vs. level walking
- Earlier reproduction of symptoms with level TM walking
  - SN = .68; SP = .95; + LR = 13.6; - LR = .34
- Longer walking time on inclined TM walking
  - SN = .50; SP = .92; + LR = 6.25; - LR = .54
- Prolonged recovery with level TM walking
  - SN = .81; SP = .68; + LR = 2.5; - LR = .28
- 77% of stenotic and 95% of non-stenotic subjects correctly identified by two-stage treadmill walking test


Pulmonary Screen Indicated if:
- History of serious pulmonary disease
- Pain complaints: R/L shoulder girdle, cervicothoracic to T-L junction
- Pain complaints: unresolved/atypical TOS with history of cancer, significant risk of lung cancer (long smoking history), Horner’s syndrome
- Positive systems review findings (RR, auscultation)

Pulmonary S/S of Concern
- Tachypnea (rapid breathing)
- Cough
- Dyspnea (labored breathing)
- Orthopnea (difficulty breathing when upright)
- Hemoptysis (expectoration (coughing up) of blood or of blood-stained sputum)
- Stridor (high-pitched sound resulting from turbulent air flow on inspiration)
- Wheezing
- Clubbing of the nails

Finger Nail Abnormalities
- Spoon Nails
  - Anemia, iron deficiency, diabetes, local fungal infection
- Clubbed Nails
  - COPD or heart defects

Gastrointestinal Screen Indicated if:
- History of serious GI disorder
- Upper GI
  - Abdominal (epigastric), thorax, shoulder girdle pain
- Lower GI
  - Abdominal (umbilical/hypogastric), lumbar, pelvic pain
- Long-term use of NSAIDs, corticosteroids, or narcotics

Gastrointestinal Screen
Likelihood of abdominal symptoms being musculoskeletal in nature?

YES
- Does coughing, sneezing, or taking a deep breath make your pain feel worse?
- Do activities such as bending, sitting, lifting, twisting, or turning over in bed make your pain feel worse?

NO
- Has there been any change in your bowel habits since the start of your symptoms?

SN = .67; SP = .84; +LR = 4.2; -LR = 0.39
Gastrointestinal Screen

Likelihood of abdominal symptoms being musculoskeletal in nature?

If in addition to the previous questions the patient also reports "No" to the following 2 questions
- Does eating certain foods make your pain feel worse?
- Has your weight changed since your symptoms started?

SN = .67; SP = .96, +LR = 16.8, -LR = 0.34


Gastrointestinal Screen

GI S/S of Concern

UPPER
- Dysphagia
- Nausea
- Vomiting
- Heartburn/indigestion
- Specific food intolerance

LOWER (bowel dysfunction)
- Constipation
- Diarrhea
- Caliber
- Difficulty initiating defecation
- Color
- Incontinence

Urogenital Screen indicated if:
- History of serious urogenital disease or disorder
- Pain
  - Flank: unilateral thoracolumbar region
  - Costovertebral angle at level of thoracolumbar junction
  - Lumbopelvic area

Urogenital Assessment
- Frequency (nocturia)
- Urgency
- Color
- Dysuria
- Reduced caliber of urine stream
- Reduced force of urine stream
- Incontinence

Urogenital S/S of Concern

Female/Male

Female
- Discharge
- Impotence
- Painful Intercourse
- Menstruation
  - Frequency
  - Date of last period
  - Dysmenorrhea – was it a normal period?
- Number of pregnancies (including complications)
- Number of deliveries (including complications)
- Menopause? (yes/no)
  - Postmenopausal bleeding?

Endocrine Systems

- History of serious endocrine system disorder
- Inconsistent symptom pattern
- Consider, if history of:
  - Arthralgias
  - Myalgias
  - Muscle cramps
  - Neuropathies
  - Cold/heat intolerance
  - Skin or hair changes
  - Gastrointestinal symptoms
  - Urogenital symptoms
  - Psychological issues
**Hyperthyroidism**

- Hair loss
- Soft nails
- Heat intolerance
- Weight loss
- Frequent bowel movements/diarrhea
- Muscle weakness (proximal)
- Muscle cramping
- Palpitations
- Tachycardia
- Tachypnea
- Exophthalmos (bulging eyes)
- Finger tremors
- Increased sweating, warm/moist palms
- Weight loss

**Hypothyroidism**

- Dry scaly skin or coarse hair
- Brittle nails, loss of eyebrow hair
- Cold intolerance
- Weight gain, puffy face
- Constipation
- Fatigue
- Anorexia
- Myalgias
- Dyspnea
- Hoarseness
- Decreased sweating
- Weight gain

**Integumentary System Screen**

- Have you recently experienced rashes?
- Have you recently noticed any enlargement or bleeding of moles?
- Burning/itching of skin?
- Exfoliation or blistering of skin?
- Screening of skin color

**Skin Color Appearance**

- Pallor (pale) - absence of pigment, blood abnormality
- Cyanosis (blue) - decreased O₂ in blood
- Jaundice (yellow) - excess bilirubin
- Gray - high body levels of metals

**Skin Lesion Characteristics**

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>BENIGN</th>
<th>MALIGNANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>&lt;6 mm</td>
<td>&gt;6 mm</td>
</tr>
<tr>
<td>Color</td>
<td>Uniform</td>
<td>Varied/black</td>
</tr>
<tr>
<td>Borders</td>
<td>Distinct/symmetric</td>
<td>Irregular/indistinct</td>
</tr>
<tr>
<td>Shape</td>
<td>Symmetric</td>
<td>Asymmetric</td>
</tr>
<tr>
<td>Consistency</td>
<td>Soft to firm</td>
<td>Firm to hard</td>
</tr>
<tr>
<td>Friability (readily crumbled/broken)</td>
<td>None</td>
<td>Often</td>
</tr>
<tr>
<td>Ulceration</td>
<td>Seldom</td>
<td>Often</td>
</tr>
<tr>
<td>Mobility</td>
<td>Mobile</td>
<td>Mobile/non-mobile</td>
</tr>
<tr>
<td>Rate of change</td>
<td>Slow</td>
<td>Slow or rapid</td>
</tr>
</tbody>
</table>

**Mnemonic for Moles and Melanomas**

- **A** = asymmetry
- **B** = borders
- **C** = color
- **D** = diameter

Photograph used by permission from American Board of Dermatology

Mnemonic from Skin Cancer Society for public awareness and self-screening
General Nervous System Screen

**Indicated if:**

**Observations**
- Balance disturbances
- Gait disturbances
- Unusual gross movement patterns
- Tremors present

General Nervous System Screen

**Follow-up questions**
- Have you been experiencing any headaches or vision changes?
- Any dizziness or vertigo?
- Seizures or unconsciousness?
- Weakness/Parasthesias?
- Alterations/Abnormalities in
  - Smell
  - Taste
  - Swallowing
  - Diplopia
  - Speech
  - If present, indication for cranial nerve testing

Cranial Nerve Exam

| CN 1: smell | CN 2: taste | CN 3,4,6: eye movement | CN 5: masturbation |
| CN 7: chew teeth, purse lips | CN 8: hearing | CN 9, 10: swallowing | CN 11: SCM |
| CN 12: tongue |

Cranial Nerve Testing

<table>
<thead>
<tr>
<th>CN</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Olfactory</td>
</tr>
<tr>
<td>2</td>
<td>Optic</td>
</tr>
<tr>
<td>3,4,6</td>
<td>Oculomotor, Trochlear, Abducenta</td>
</tr>
<tr>
<td>5</td>
<td>Trigeminal</td>
</tr>
<tr>
<td>7</td>
<td>Facial</td>
</tr>
<tr>
<td>8</td>
<td>Auditory</td>
</tr>
<tr>
<td>9</td>
<td>Accessory</td>
</tr>
<tr>
<td>10</td>
<td>Glossopharyngeal, Vagus</td>
</tr>
<tr>
<td>11</td>
<td>Spinal Accessory</td>
</tr>
<tr>
<td>12</td>
<td>Hypoglossal</td>
</tr>
</tbody>
</table>

Extraocular Motions

<table>
<thead>
<tr>
<th>CN</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ophthalmic</td>
</tr>
<tr>
<td>2</td>
<td>Oculomotor</td>
</tr>
<tr>
<td>3</td>
<td>Optic</td>
</tr>
<tr>
<td>4</td>
<td>Optic</td>
</tr>
<tr>
<td>5</td>
<td>Trigeminal</td>
</tr>
</tbody>
</table>

Hearing Screen

**Whisper test**
- Do first, before Weber’s and Rinne’s tests
- If normal response (patient can accurately repeat 4 bi-syllabic words/numbers), have screened all elements of the hearing mechanism (outer, middle, and inner ear)
- Easy to implement and can be completed quickly
- After this test, ask the patient if the sound was the same in both ears, or louder in a specific ear. If there is lateralization or hearing abnormalities perform the Weber and Rinne tests using a tuning fork.
**Weber Test**
- Done if whisper test findings abnormal
- Preferably use tuning fork of 512 Hz
- After striking tuning fork, firmly place on the vertex of the cranium
- Normal response: patient should hear the sound in both ears with equal intensity or in the center of the head
- Abnormal response: there will be "lateralization" of sound, to side where sound is louder if there is a conduction hearing loss

**Rinne’s Test**
- Done if whisper and Weber’s tests are equivocal or abnormal
- Differentiates air vs. bone conduction hearing
- Preferably use tuning fork of 512 Hz
- After striking the tuning fork, place stem of the fork firmly on mastoid process
- When sound no longer heard, place the fork in front of the same-side ear

**Screening for Motor Neuron Lesions**
- **Babinski** for LE
  - Sharp object along plantar surface
  - UMN lesion if + bilaterally
  - LMN lesion if + unilaterally
- **Hoffman’s** Test for UE
  - Flick distal phalanx of middle finger to see if there is a reflexive flexion of the thumb IP joint
  - "Babinski" of the UE

**Common Visceral Manifestations**
- possibly disguised as a musculoskeletal problem

**Abdominal Aortic Aneurysm (AAA)**
- Patient unable to find a comfortable position
- Midline lower thoracic/lumbar pain (variable)
  - Pain descriptors: throbbing or pulsating
  - Palpable pulsating abdominal mass
  - History of smoking
  - Positive family history
  - History of AAA or vascular atherosclerotic disorders

**Gastrointestinal System Disorders** (Remember the prediction rule)
- Colicky abdominal pain
  - Severe abdominal pain caused by spasm, obstruction, or distalation of any of the hollow visera
- Nausea, vomiting
- Abdominal distension
- Fever/chills/sweats
- Constipation or diarrhea
- Pain relieved by sitting in forward flexion (pancreatitis)
- Rebound tenderness
Clinical Manifestations of Various Diseases and Non-mechanical Disorders Associated with Back Pain

- Renal/Urinary Tract Disorders
  - Pyelonephritis, nephrolithiasis, urinary tract infection
  - Urinary frequency, urgency
  - Hematuria
  - Dysuria
  - Renal colic (severe pain)

- Reproductive Organ Disorders
  - Prostatitis, prostate ox, endometriosis, ectopic pregnancy
  - Urinary frequency, hesitancy
  - Hematospermia, hematuria
  - Painful ejaculation
  - Change in menstruation
    - Frequency of periods, dysmenorrhea, vaginal bleeding/spotting

- Remember, the signs of metastatic cancer
  - Older than 50
  - Previous cancer history
  - Unexplained weight loss
  - Inadequate relief with rest
  - Failure to improve with 4 weeks of therapy

- Vertebral Osteomyelitis
  - (more common in older children and adolescents)
  - Fever, chills, sweats
  - Extreme fatigue/malaise
  - History of immunosuppression
  - Adenopathy
  - IV drug use

- Inflammatory Arthritis
  - Ankylosing spondylitis, psoriatic arthritis, reactive arthritis
  - Severe, morning stiffness, lasting > 1 hr
  - Symptoms present for at least 3 months
  - Symptoms improve with activity, worsen with rest
  - Limitation of spine movements in all planes
  - Decreased chest wall expansion
  - Fever, fatigue, weight loss

Clinical Manifestations of Various Diseases and Non-mechanical Disorders Associated with Shoulder Pain

Left Shoulder
- Ruptured Spleen
- Myocardial Ischemia
- Pancreatic Origin
- Ectopic Pregnancy
- Mononucleosis
- Ipsilateral Pulmonary
  - Pleurisy, Pancoast’s tumor, Pneumonia
- Ipsilateral Kidney

Right Shoulder
- Peptic Ulcer
- Liver Dysfunction
  - Acess, hepatitis, cirrhosis, tumors
- Acute Cholecystitis
- Ipsilateral Pulmonary
- Ipsilateral Kidney
Clinical Manifestations of Various Diseases and Non-mechanical Disorders Associated with Shoulder Pain

- **Pulmonary Origin**
  - Presence of pleuritic symptoms
    - chest pain
    - Cough
    - Tachypnea, dyspnea, wheezing
    - Smoking history
  - Pain is eased by lying on effected side
  - Pain is increased with recumbent lying

- **Cardiac Origin**
  - Increased shoulder pain with shoulder at rest
  - Corresponding symptoms like nausea, sweating, chest tightness
  - History of angina, atherosclerosis, etc

- **Gastrointestinal Origin**
  - Diaphragmatic irritation to the same shoulder secondary to:
    - Peptic ulcer
    - Gall bladder disease
    - Hiatal hernia
  - Typical S/S
    - Nausea/vomiting
    - Anorexia or early satiety
    - Melena
  - Impact of eating (30 minutes – 2 hours)
  - Worsening pain 2-4 hours after NSAIDs

- **Liver/Biliary Origin**
  - Pain symptoms in midback, scapular and right shoulder areas
  - This may be the first overt symptom in conjunction with some underlying systemic signs/symptoms

Colon Cancer

- Neoplasms that develop in the large intestine; 3rd most common for both men and women
  - Age > 50
  - Bowel disturbances
  - Rectal bleeding, black stools
  - Unexplained weight loss
  - Previous personal or familial history of colon
  - Pain unchanged by position or movement

Cellulitis

- History of recent skin ulceration/abrasion
- Recent history of venous insufficiency, CHF, cirrhosis
- Pain, skin swelling, warmth
- Advancing irregular margin of erythema/reddish streaks
- Fever, chills, malaise, weakness
Soft Tissue Sarcomas
- Bony Tumors
  - Osteosarcomas
  - Chondrosarcomas
  - Osteoid Osteoma

Oncological Diseases that cause **Knee Pain**

Soft Tissue Sarcoma
- Persistent swelling or lump in a muscle
- Pain
- Local swelling
- Warmth of overlying skin
- Pathological fracture

Clinical Manifestations of Oncological Diseases common at the **Knee**

Osteosarcoma
- Most common form of bone cancer
- Occurs typically in 10-25 YO age group (boys > girls)
- Usually located in the epiphyses of long bones
  - Distal end of femur, proximal end of tibia/fibula, proximal humerus
- Metastasizes through the blood

Osteosarcoma Signs/Symptoms
- Progressive pain, swelling, and loss of motion at affected joint (knee, shoulder most common)
- Tender lump
- Weight loss, malaise, fatigue
- Pathological fracture

Clinical Manifestations of Oncological Diseases common at the **Knee**

Chondrosarcoma
- Cartilaginous tumor
- More common in adults > 40 yo
- Slow growing neoplasm typically in the pelvis, shoulder girdle, or long bones
- Variable presentation that can mimic mechanical problems when of sufficient size

Osteoid Osteoma
- Non-cancerous, benign, osteoblastic tumor
- Most common in young adults (men > women)
- Translucent area on x-ray surrounded by bony sclerosis
- S/S
  - Nocturnal bone pain relieved by aspirin
  - Local warmth and palpable tenderness

Femoral Osteoid Osteoma
Final Thoughts

- A single red flag does not always constitute an emergency action phone call.
- Like special tests, a cluster of findings will increase or decrease the likelihood of the underlying disease process.
  Look at the big picture!

Act Quickly and Rationally

- Consider whether the red flag is an "emergency" finding - something that will be affected by how quickly you act.
  - Factors that require immediate medical attention would include findings like:
    - loss or altered consciousness,
    - rapidly progressing neurological deficits,
    - pulsatile abdominal masses, or
    - abnormal vitals (breathing, pulse, BP, body temp)

General Indications for Medical Referral

- Combination of red or yellow flags
- Symptoms seem out of proportion to injury
- Symptoms persist beyond expected prognosis for healing or recovery
- Pain does not seem to be affected by activity or rest
- Symptoms just don’t fit the expected presentation

"When you hear hoof beats – think horses, not zebras"

- The most obvious cause and the simplest explanation is usually correct.
- By definition, red flag findings indicate rare or unusual situations.
- Take into context all of the patient’s circumstance.
  - "When you’re at the zoo or on an African safari - it is not impossible but pretty unlikely if you are on a ranch west of town.

That said,

Your direct access skills and knowledge require you to be vigilant for unusual presentations and aware of how peripheral or mechanical symptoms may often mimic visceral or non-mechanical pathology.

Thank You