Musculoskeletal System/Skin & Subcutaneous Tissue

United States Medical Licensing Examination (USMLE) Step 1

6 to 12% of Step 2 CK · 9 sections · content outline and specifications

This system covers bones, joints, muscles, skin and the tissue under the skin, about 6 to 12% of Step 2 CK. Questions ask for the next step: which fracture needs surgery today, which joint needs aspiration, which back pain needs an MRI now, and which skin lesion needs a biopsy. You also need the first-line drug for gout, rheumatoid arthritis and skin infections, screening for osteoporosis, burn and pressure injury care, and the common problems of children's hips and growth plates. Many items reward safe action: treat an emergency first and confirm later.

You should be able to: After this guide, you should be able to pick the next step for an orthopedic or skin emergency, choose the best test and the first-line drug for common joint and skin diseases, apply osteoporosis and infant vitamin D guidance, and manage burns and pressure injuries safely.

Every section: the key point and the trap

1 Orthopedic emergencies

Compartment syndrome: pain out of proportion and pain with passive stretch come first; pulses are often still present. A delta pressure (diastolic minus compartment) under 30 mm Hg confirms it. Treat with emergency fasciotomy.

Trap: A normal pulse does not rule out compartment syndrome. Loss of the pulse is a late sign.

2 Fractures and sports injuries

Snuffbox tenderness after a fall on an outstretched hand: treat as a scaphoid fracture with a thumb spica splint even if the first radiograph is normal; repeat imaging in 10 to 14 days or get an MRI.

Trap: Do not send home a snuffbox-tender wrist with a normal radiograph and no splint. A missed scaphoid fracture can cause nonunion and avascular necrosis.

3 Low back and neck pain

Most acute low back pain without red flags improves within 4 to 6 weeks. Do not image. Advise staying active; use heat, NSAIDs and physical therapy.

Trap: Imaging of uncomplicated back pain does not improve outcomes. Save MRI for red flags or deficits.

4 Pediatric orthopedics

Developmental dysplasia of the hip: risk factors are breech position, female sex and family history. Use Ortolani and Barlow tests; ultrasound under about 4 to 6 months, radiograph after. Treat early with a Pavlik harness.

Trap: Hip disease often presents as knee pain in children. Always examine the hip when the knee exam is normal.

5 Arthritis and connective tissue disease

Acute gout: NSAIDs, colchicine or glucocorticoids, chosen by kidney function, bleeding risk and drug interactions. Urate-lowering therapy (allopurinol first-line) aims for urate under 6 mg/dL.

Trap: Do not start, or stop, allopurinol to treat the pain of a flare. It is a long-term preventive drug.

6 Skin infections

Nonpurulent cellulitis is usually streptococcal: oral cephalexin, dicloxacillin or penicillin. Mark the edge and elevate the limb.

Trap: Fever, shock and pain beyond the findings in a skin infection mean necrotizing fasciitis, not cellulitis. Call surgery.

7 Rashes and drug reactions

Stevens-Johnson syndrome (under 10% detachment) and toxic epidermal necrolysis (over 30%) follow drugs such as allopurinol, sulfonamides, antiepileptics and nevirapine. Stop the drug and admit, often to a burn unit.

Trap: Scalded skin syndrome spares the mucous membranes; SJS and TEN involve them.

8 Skin cancer, burns and pressure injuries

Melanoma: use ABCDE. Do a full-thickness excisional biopsy with 1 to 3 mm margins; the Breslow depth sets the final margins and whether to do a sentinel node biopsy.

Trap: A burn formula is a starting point, not a fixed order. Both too little and too much fluid harm the patient.

9 Bone health and nutrition

USPSTF: screen women 65 and older for osteoporosis with DXA; screen younger postmenopausal women with risk factors.

Trap: Normal calcium, phosphate and ALP fit osteoporosis. Abnormal values point to another bone disease such as osteomalacia, hyperparathyroidism or Paget disease.

Key terms

Compartment syndrome: High pressure in a closed muscle space that cuts off blood flow to muscle and nerves.

Avascular necrosis: Death of bone tissue because its blood supply is lost.

Fasciotomy: Surgery that cuts the tissue around muscles to release pressure.

Nikolsky sign: The outer skin slides off with light rubbing.

Breslow depth: How deep a melanoma goes into the skin, in millimeters.

DXA: A low-dose x-ray test that measures bone density.

Osteomalacia: Soft adult bones from poor mineralization, usually from lack of vitamin D.

Ortolani sign: A clunk when a dislocated infant hip moves back into its socket.

Saddle anesthesia: Numbness of the perineum, buttocks and inner thighs.

Crepitus: A crackling feel under the skin from gas in the tissue.

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