

**Phase 2, Section 7: Skin, Muscle, Bone, and Joint**  
**Draft Goals and Objectives**

**Overview goals:**

**1) Clinical Medicine:**

- a) Gather essential and accurate information from clinic patients presenting with dermatologic and musculoskeletal complaints
- b) Produce accurate, clear, and organized documentation of patient encounter data in the form of both SOAP (**S**ubjective, **O**bjective, **A**ssessment, **P**lan) notes and complete H&Ps (**H**istory and **P**hysical exams) on patients with common dermatologic and musculoskeletal complaints
- c) Develop a basic differential diagnoses for patients with common dermatologic and musculoskeletal complaints
- d) Describe studies used in the assessment of common dermatologic and musculoskeletal complaints, and discuss their utility
- e) Utilize information technology and multidisciplinary resources to direct systems of care to benefit patients

**2) Medical Sciences:**

- a) Name, recognize, and describe common dermatologic and musculoskeletal diseases
- b) Discuss the clinical presentation and pathophysiology of common dermatologic and musculoskeletal diseases
- c) Define terms used to describe common dermatologic and musculoskeletal findings on physical, microscopic, and radiologic examinations
- d) Select and describe appropriate treatments of common dermatologic and musculoskeletal problems
- e) Describe procedures and their effects relevant to dermatologic and musculoskeletal problems
- f) Describe appropriate pre-participation and dermatologic screening recommendations for pediatric and adult patients

**3) Medical Arts:**

- a) Describe common patient narratives of challenging dermatologic and musculoskeletal conditions
- b) Analyze ethical issues relevant to dermatologic and musculoskeletal presentations
- c) Consider the ethics of medical resource allocation as it pertains to dermatologic and musculoskeletal interventions

## **Skin Draft Objectives**

### **Clinical Sciences:**

- 1) Recognize and describe treatment options for patients suffering from the following common skin disorders:
  - a) Anaphylactic shock
    - i) Differentiate between allergic reactions and reactions caused by other agents
  - b) Melanoma
  - c) Actinic keratoses
  - d) Basal cell and squamous cell carcinoma
  - e) Papulosquamous diseases
  - f) Insect bites including head and body lice, tick, fleas, scabies, bed bug, pubic lice, black widows, bee, wasps, chiggers, and mosquitoes
  - g) Human, cat, dog and snake bites
  - h) Acne vulgaris
  - i) Rosacea
  - j) Dermatitis including the use of steroids
  - k) Wound healing
  - l) Lacerations
  - m) Burns
  - n) Stasis ulcers
  - o) Bacterial, viral and fungal skin infections
- 2) Describe the risks, purpose, and processes of the following procedures:
  - a) Cutaneous anesthesia
  - b) Freezing
  - c) Electrocautery
  - d) Biopsy (shave, punch and excisional)
  - e) Nail removal and matrix ablation
- 3) Describe skin testing for allergies in children
- 4) Define the following macroscopic terms used to describe skin lesions:
  - a) Macule
  - b) Patch
  - c) Papule
  - d) Nodule
  - e) Plaque
  - f) Vesicle
  - g) Bulla
  - h) Blister
  - i) Pustule
  - j) Wheal
  - k) Scale
  - l) Lichenification
  - m) Excoriation
  - n) Onycholysis
- 5)

### Medical Arts:

- 1) Describe the history and culture of the beautiful
- 2) Describe the impact of cosmetic deformity on self esteem, development, and functionality for patients of all ages
- 3) Describe cultural aspects of disability in American society
- 4) Describe ethical considerations relevant to performance enhancing drugs in sports
- 5) Describe ethical considerations relevant to cosmetic medicine and resource allocation within the health care industry
- 6) Describe the historical epidemic of smallpox and the eradication process
- 7) Describe the impact of sun exposure on skin cancer, and the skin cancer epidemic
- 8) \_\_\_\_\_

**Comment [DM1]:** The itch that rashes / the rash that itches – DR – New Yorker – AC sending.

### Medical Sciences:

- 1) Recall the layers of the integument (epidermis, dermis, hypodermis) including the appropriate layers and location for:
  - a) blood vessels
  - b) hair roots
  - c) sebaceous glands
  - d) eccrine sweat glands
  - e) apocrine glands
  - f) nerve endings
- 2) Contrast “thick” versus “thin” skin
- 3) Explain the structure and function of the epidermis including keratinocyte renewal
  - a) Describe the layers of the epidermis and identify the characteristic histological feature of each layer
  - b) Describe the origin, morphology, location and function of melanocytes, Langerhan’s (dendritic) and Merkel cells
  - c) Identify and describe the structure of the basement membrane and dermo-epithelial junction
- 4) Describe the dermis and its components of the papillary and reticular layers
  - a) Identify and describe the vascular supply of the dermis
  - b) Describe the innervation of the skin
  - c) Name and describe the principal types of nerve endings and their functions (Meissner’s and Pacinian corpuscles)
- 5) Describe the histological structure and function of the hypodermis
- 6) Define the following microscopic terms used to describe skin abnormalities:
  - a) Hyperkeratosis
  - b) Parakeratosis
  - c) Hypergranulosis
  - d) Acanthosis
  - e) Papillomatosis
  - f) Dyskeratosis

**Comment [DM2]:** What does this mean? Fuzzy objective. Make more specific. AC “Histologically contrast skin from different areas of the body, over the lifecycle, med effects”.

**Comment [DM3]:** Also in b and b – can be quick review if covered in depth there.

- g) Acantholysis
  - h) Spongiosis
  - i) Jydropic Swelling
  - j) Exocytosis
  - k) Erosion
  - l) Ulceration
  - m) Vacuolization
  - n) Lentiginous
- 7) Recognize pigmentation and melanocytic disorders grossly and microscopically, and describe their pathogenesis, including:
    - a) Vitiligo
    - b) Freckle (Ephelis)
    - c) Melasma
    - d) Lentigo
    - e) Melanocytic Nevus (Mole)
    - f) Dysplastic Nevi
    - g) Malignant Melanoma
  - 8) Recognize benign epithelial tumors grossly and microscopically, and describe their pathogenesis, including:
    - a) Suborrheic keratoses
    - b) Acanthosis nigricans
    - c) Fibroepithelial Polyp
    - d) Epithelial Cyst
    - e) Adnexal Tumors
    - f) Keratoacanthoma
  - 9) Recognize premalignant and malignant epidermal tumors grossly and microscopically, and describe their pathogenesis, including:
    - a) Actinic Keratosis
    - b) Squamous Cell Carcinoma
    - c) Basal Cell Carcinoma
    - d) Merkel Cell Carcinoma
  - 10) Recognize tumors of the dermis grossly and microscopically, and describe their pathogenesis, including:
    - a) Benign Fibrous Histiocytoma (Dermatofibroma)
    - b) Dermatofibrosarcoma Protuberans
    - c) Xanthomas
    - d) Dermal Vascular Tumors
  - 11) Recognize tumors of cellular immigrants to the skin grossly and microscopically, and describe their pathogenesis, including:
    - a) Langerhans Cell Histiocytosis
    - b) Mycosis Fungoides (Cutaneous T-Cell Lymphoma)
    - c) Mastocytosis
  - 12) Recognize disorders of epidermal maturation grossly and microscopically, and describe their pathogenesis, including:
    - a) Ichthyosis

13) Recognize acute inflammatory dermatoses grossly and microscopically, and describe their pathogenesis, including:

- a) Urticaria
- b) Acute Eczematous Dermatitis
- c) Erythema Multiforme

**Comment [DM4]:** Include SJS and TEN

14) Recognize chronic inflammatory dermatoses grossly and microscopically, and describe their pathogenesis, including:

- a) Psoriasis
- b) Suborrheic Dermatitis
- c) Lichen Planus
- d) Lupus Erythematosus

15) Recognize bullous diseases grossly and microscopically, and describe their pathogenesis, including:

- a) Pemphigus
- b) Bullous Pemphigoid
- c) Dermatitis Herpetiformis
- d) Epidermolysis Bullosa
- e) Porphyria

16) Recognize disorders of epidermal appendages grossly and microscopically, and describe their pathogenesis, including:

- a) Acne Vulgaris

17) Recognize panniculitis grossly and microscopically, and describe their pathogenesis, including:

- a) Erythema Nodosum
- b) Erythema Induratum

18) Recognize Infections and infestations grossly and microscopically, and describe their pathogenesis, including:

- a) Verrucae (warts)
- b) Molluscum Contagiosum
- c) Impetigo
- d) Superficial fungal infections
- e) Arthropod bites, stings, and infestations

**Comment [DM5]:** Cellulites, necrotizing fasciitis – whole spectrum of disease.

19) Describe the typical patient scenario and presentation of patients with the above skin disorders

20) Describe the natural course of the above skin disorders

21) List appropriate pharmacologic and other treatment options for patients with the above skin disorders

22) Describe liquid nitrogen, and the process and effects of its administration

**Comment [DM6]:** JT – psychiatric dermatologic issues.

**Comment [DM7]:** Self inflicted injury JT

**Comment [DM8]:** OK to include plastics and burn?  
AC willing to review from burn perspective.  
Could email Brad Rockwell too.

## **Muscle, Bone and Joint Draft Objectives**

**Comment [DM9]:** Need to have rheum review – grant cannon or mike battistone.

### **Clinical Medicine**

- 1) Recognize and initiate appropriate treatment for the following musculoskeletal emergencies: (AAMC)
  - a. Septic arthritis
    - Necrotizing fasciitis
    - Compartment syndrome
    - Open fractures
    - Cauda equina syndrome
    - Joint dislocation
- 2) Perform, and interpret normal and abnormal findings for the below joint examinations in pediatric and adult patients:
  - a) Hands:
    - i) Inspection of palmar and dorsal surfaces
    - ii) Grip strength and ROM bilaterally
    - iii) ROM and deformities of MCP, PIP, DIP joints
    - iv) motor testing against resistance
    - v) sensation to touch
    - vi) capillary refill
  - b) Wrists:
    - i) Inspection
    - ii) Range of motion
    - iii) Strength against resistance: flexion, extension, pronation, supination
  - c) Elbows:
    - i) Inspection
    - ii) Range of motion
    - iii) Strength against resistance
    - iv) Ulnar compartment
    - v) Olecranon bursa
  - d) Shoulders:
    - i) Inspection
    - ii) Range of Motion
    - iii) Strength against resistance
    - iv) Impingement signs
    - v) Sensation
  - e) Neck:
    - i) Inspection
    - ii) Range of Motion
    - iii) Palpation for masses and tenderness
  - f) Back:
    - i) Inspection – walking, toe and heel walk, forward flexion for scoliosis
    - ii) Range of Motion spine, hip, and hamstrings
    - iii) Palpation – vertebra, musculature
    - iv) Straight leg raise including maneuvers for drug-seeking patients
    - v) Strength – L1-S1

- g) Hips:
    - i) Inspection – walking and supine
    - ii) Range of motion hip and hamstring
    - iii) Palpate and stretch IT band
    - iv) Palpate trochanteric bursa
  - h) Knees:
    - i) Inspection – walking and supine
    - ii) Range of Motion
    - iii) Evaluate for effusion
    - iv) Palpate for crepitus
    - v) Palpate joint line, infrapatellar tendon, origin and insertion of MCL and LCL
    - vi) Test for integrity of ACL, PCL, LCL, and MCL ligaments and meniscus
    - vii) Squat
  - i) Foot and Ankle:
    - i) Inspection – walking and seated inspection of surfaces, skin, nails
    - ii) Range of Motion
    - iii) Palpation of commonly fractured bones, commonly sprained ligaments, DP and PT pulses
    - iv) Sensory testing including monofilament testing
    - v) Strength of dorsiflexion, plantarflexion, inversion, and eversion against resistance
    - vi) Dislocation
    - vii) Sensation
    - viii) Reflexes – patellar, Achilles, and babinski
  - j) Conduct and interpret normal and abnormal results of the geriatric “get up and go” functional assessment test
  - k) Impact of nutritional deficiencies and chronic illness on the skin, muscles, bones, and joints
  - l) Appropriate use of short versus long-acting narcotics in patients with common musculoskeletal pain syndromes
  - m) Appropriate care boundaries for patients on long-term narcotic medications
- 2) Classify synovial fluid samples as normal, non-inflammatory, inflammatory and infectious
- a) Outline how to withdraw synovial fluid
  - b) Describe how clarity, color and viscosity assist in determining joint problems
  - c) Explain how the WBC, percent of PMN's and culture stain assist in determining the types of joint problems
- 3) Describe the impact of the below nutritional deficiencies and chronic illnesses on skin, muscle, and bone, and joints:
- a) Vitamin B-6
  - b) Vitamin B-12
  - c) Vitamin C

**Comment [DM10]:** Integrated back pain learning session DR

- d) Vitamin D
  - e) Protein
  - f) Other?
- 4) Describe a structure by which chronic pain patients can be safely and appropriately be treated while remaining functional, including: (AAMC)
- a) Initial evaluation (AAMC)
  - b) Risk assessment
  - c) Appropriate selection of treatment options (AAMC)
  - d) Initiation, titration and maintenance of opioid dosing
  - e) Patient education about processes, alternatives, and risks
  - f) Licensing and legislative requirements
  - g) Governmental resources for oversight
  - h) Appropriate monitoring during titration and maintenance of treatment
  - i) Negotiating boundaries within the doctor-patient relationship
  - j) Identification of management of prescription dependence
  - k) Interdisciplinary approach (AAMC)
- 5) Describe the clinical presentation and treatment of patients with abnormal bone physiology (AAMC)

**Comment [DM11]:** Consider Amy Powell for clinical lectures. Jeff Rosenbluth

### Medical Arts

- 1) Describe the polio epidemic and eradication efforts
- 2) Describe population-based approaches toward injury prevention
- 3) Describe the impact of Vitamin D on bone density over the lifecycle
- 4) Describe the impact of osteoporosis and it's complications on elderly patients
- 5) Discuss the impact of aging on musculoskeletal health (AAMC)
- 6) Describe the current epidemic of prescription pain medication deaths
- 7) Describe the role of physical activity on health promotion at all ages
- 8) Describe key principles of injury and disease prevention (AAMC)
- 9) Describe vulnerabilities created by duties of doctors and medical students
  - a. Public expectations, uncertainty, and conflict
  - b. Professional regulations and standards
  - c. Response to clinical mistakes
  - d. The law of negligence, complaints and disciplinary procedures
  - e. Health of doctors and professional performance: risks of help and duties to disclose
  - f. Medical ethics and the involvement of doctors in police interrogation, torture, and capital punishment

**Comment [DM12]:** Move to B&B DR

**Comment [DM13]:** Prevalence of vit D deficiency and various physiologic impacts

### Medical Sciences

- 1) Understand normal and abnormal physiologic characteristics of bone (AAMC)
- 2) Review axial and appendicular skeleton using bones and radiographic images

3) Review the following muscles groups including major attachments, innervations and actions

- a. Scapular muscles
- b. Rotator cuff
- c. Axillary muscles
- d. Arm and forearm muscles
- e. Hand muscles
- f. Hip muscles
- g. Thigh muscles
- h. Leg muscles
- i. Foot muscles

**Comment [DM14]:** Add insertions DR

**Comment [DM15]:** Add muscle physiology

4) Review the brachial, lumbar and sacral plexuses including their branches and common locations for lesions

5) Describe the structural, organic, and mineral elements of bone

6) Describe the structure, location, and function of bone cells

7) Describe the influences of bone morphogenic proteins on bone-forming cells

8) Define woven bone and lamellar bone

9) Describe basic multicellular units (BMU), modeling, and remodeling of bone

10) Describe processes of normal bone formation and growth

11) List factors impacting the bone mass of an individual patient

12) Describe common trends of bone density over the lifetime

13) Develop an organizational framework for the diagnosis and treatment of patients presenting with: (AAMC)

low back pain

fractures of the axial and appendicular skeleton

osteoarthritis

rheumatoid arthritis

crystalline arthritis: gout and pseudogout (calcium pyrophosphate)

sports injuries (both chronic overuse phenomena and acute injury)

occupational injury (acute and chronic overuse and injury)

musculoskeletal infection

musculoskeletal neoplasia (both primary and metastatic disease)

**Comment [DM16]:** Common trends of muscle mass over lifetime too AC Also effect of bedrest and cachexia. Also impact of weightless, bedrest on muscle atrophy. Muscle wasting. CA, HIV, burn, trauma, and integrate nutrition.

**Comment [DM17]:** Consider adding anabolic steroid effects DR

14) Understand the relevant physiologic, pathologic, and sociologic issues involved in the treatment of patients with: (AAMC)

spinal cord injury

stroke

other neurologic conditions

myopathies

neuromuscular complications in adults with diabetes mellitus

orthopaedic disorders in children

**15)** Describe the pathophysiology, common patient presentations, clinical course and appropriate treatments for the following musculoskeletal disorders:

- a. low back pain (AAMC)
- b. fractures of the axial and appendicular skeleton (AAMC)
- c. osteoarthritis (AAMC)
- d. rheumatoid arthritis (AAMC)
- e. crystalline arthritis: gout and pseudogout (calcium pyrophosphate) (AAMC)
- f. sports injuries (both chronic overuse phenomena and acute injury) (AAMC)
- g. occupational injury (acute and chronic overuse and injury) (AAMC)
- h. musculoskeletal infection (AAMC)
- i. musculoskeletal neoplasia (both primary and metastatic disease) (AAMC)
- j. Achondroplasia
- k. Osteogenesis Imperfecta
- l. Osteopetrosis
- m. Osteoporosis
- n. Paget disease (osteitis deformans)
- o. Rickets and Osteomalacia
- p. Hyperparathyroidism and Osteitis fibrosis cystica (von Recklinghausen disease)
- q. Renal Osteodystrophy
- r. Osteonecrosis (Avascular necrosis)
- s. Osteomyelitis (pyogenic, tuberculous, and syphilitic)
- t. Diffuse idiopathic skeletal hyperostosis
- u. Osteochondritis
- v. Dissecans
- w. Chondromalacia patellae
- x. Osteonecrosis
- y. Neuropathic arthritis

**16)** List and define terms used to describe fractures, including:

- a. Traumatic / nontraumatic
- b. Complete / incomplete
- c. Closed / compound
- d. Comminuted
- e. Displaced
- f. Angulated
- g. Pathologic
- h. Stress

**Comment [DM18]:** Remove a few less relevant, and add most common presentations (shoulder impingement) group

**17)** Describe the characteristics, incidence, risk factors, pathophysiology, and common patient presentations of bony tumors, including:

- a. Osteoma
- b. Osteoid Osteoma and Osteoblastoma
- c. Osteosarcoma

**Comment [DM19]:** Use radiologic studies throughout the curriculum, and formally teach basics of reading. DM Julia Crim

**Comment [DM20]:** To demote certain levels of detail, can "grey out" certain parts of list, and we will highlight and test on those that are not grey. Also super to have checklist of what they see in clinic.

- d. Osteochondroma
- e. Chondroma
- f. Chondroblastoma
- g. Chondromyxoid Fibroma
- h. Chondrosarcoma
- i. Fibrous cortical defect and Nonossifying fibroma
- j. Fibrous dysplasia
- k. Fibrosarcoma and Malignant Fibrous Histiocytoma
- l. Ewing Sarcoma and Primitive neuroectodermal tumor (PNET)
- m. Giant cell tumor
- n. Metastatic tumors to bone

**18)** Classify joints in the body according to function (synarthrotic, amphiarthrotic, diarthrotic)

**19)** Identify the primary synovial joints in the body

**20)** List the anatomy and biochemical characteristics of joints and connective tissues

**21)** Describe factors influencing matrix turnover in joints

**22)** Describe the pathophysiology, common patient presentations, clinical course, radiographic presentation and appropriate treatments for each of the following joint disorders:

- a. Osteoarthritis
- b. Rheumatoid arthritis
- c. Juvenile Rheumatoid arthritis
- d. Ankylosing Spondyloarthritis
- e. Reactive arthritis
- f. Psoriatic arthritis
- g. Suppurative arthritis
- h. Tuberculous arthritis
- i. Lyme arthritis
- j. Viral arthritis
- k. Gout and Gouty arthritis
- l. Calcium Pyrophosphate Crystal Deposition Disease (Pseudogout)
- m. Ganglion and synovial cysts
- n. Pigmented villonodular synovitis and Giant cell tumor of a tendon sheath
- o. Sprains and strains
- p. Bursitis
- q. Myopathies
- r. Myalgias
- s. Carpal tunnel
- t. Tarsal tunnel

**Comment [DM21]:** Is worthy of priority for time, detail. Out is currently covered in biochem, but will not be kept.

**Comment [DM22]:** DR to provide goals and objectives for muscle.

**Comment [DM23]:** Mention briefly, will be covered in B/B. Call them "compression mononeuropathies here. Get these g/os from DR also.

**23)** Define rheumatoid arthritis (RA) and outline etiology, risk factors and clinical features

- a. Understand the cell types, inflammatory makers and mechanisms involved
- b. Discuss extra-articular manifestations of RA

c. Outline how RA is diagnosed and describe its treatment

**24) Describe and systemic lupus erythematosus (SLE)**

a. Define connective tissue diseases (CTD) and explain why SLE is considered a CTD

b. Describe the criteria necessary to diagnose SLE and outline the tests

c. Outline the pathogenesis of SLE including treatment

**Comment [DM24]:** Go deeper on lupus here. Use more aggressive verb for objective. RA

**25) Define vasculitis, its potential clinical features, and the spectrum of disease entities in which this is seen**

a. Discuss the different types of vasculitis

b. Discuss historical and laboratory features of vasculitis

c. Discuss the histopathological features of vasculitis

d. Discuss the importance of ANCA and its limitations

**Comment [DM25]:** Define vasculitis versus vasculopathy” DR

**Comment [DM26]:** Mention lightly – more covered in circ and resp

**26) Define and describe the clinical features of asymptomatic hyperuricemia and gout**

**27) Inflammatory myositis and systemic sclerosis**

a. To understand the clinical classification of the idiopathic inflammatory myopathies and systemic sclerosis

b. To identify syndromes associated with myositis-specific antibodies and systemic sclerosis-associated antibodies, and the role of serology

c. To understand the appropriate diagnostic work-up for the idiopathic inflammatory myopathies and systemic sclerosis

d. To understand management challenges in idiopathic inflammatory myopathies and systemic sclerosis

**Comment [DM27]:** DR move to under muscle section – DR will send g/os to combine.

**28) Understand the relative significance of the Jones criteria for the diagnosis of rheumatic fever**

a. Understand the therapy for acute rheumatic fever and prophylaxis of recurrent events

b. Recognize the different subtypes of juvenile idiopathic arthritis, including the differences between the subtypes as they relate to onset, clinical manifestation and prognosis

c. Be familiar with the manifestations of Kawaskaki disease

**Comment [DM28]:** Move to cardiology all pertaining to rheumatic fever.

**Comment [DM29]:** Keep this as relates to JRA.

**29) Recognize key features of the most common clinical presentations of bursitis and tendonitis**

a. Describe the general approach to management of bursitis and tendonitis

b. Recognize the clinical presentation of patients with polymyalgia rheumatica and recognize red flags for the development of giant cell (temporal) arteritis

**Comment [DM30]:** Move t vascular

**30) Identify the key clinical features of fibromyalgia, and know the general approach to its management**

**31) Discuss clinical diagnosis, radiographic findings, differential diagnosis and treatment options for each of the following common orthopaedic problems:**

**Comment [DM31]:** Lighten the verb for these examples – pathophysiology only on a few as clinical correlations. Most can go to phase ¾. “recognize”

- a. Adult: distal radius fracture, knee meniscal tear, ACL tear, hip osteoarthritis, trigger digits, herniated cervical disc, rotator cuff tear, lateral epicondylitis, intertrochanteric hip fracture
- b. Pediatric: scoliosis, fractures, osteomyelitis, septic arthritis, hip dysplasia, torsional problems, planovalgus, club foot, Legg-Calve-Perthes, Slipped Capital Femoral Epiphysis (SCFE)

**32) Define spondyloarthropathies**

- a. Be able to identify conditions associated with high frequency HLA-B27 antigen positivity
- b. Be familiar with proposed mechanisms of disease pathogenesis and HLA-B27 positivity
- c. Be able to describe the major clinical features of ankylosing spondylitis.
- d. Be able to list the major clinical abnormalities seen in reactive arthritis.
- e. Be able to discuss various types of arthritis associated with psoriasis
- f. Be able to characterize two distinct patterns of articular involvement associated with inflammatory bowel disease

**33) Fracture care and orthopedics in trauma**

- a. Understand the objectives and principles of the trauma system
- b. Be able to coherently relate the history, physical exam and radiographic findings of a patient with a fracture
- c. Understand what constitutes an orthopaedic emergency and be able to relate the initial treatment of same
- d. Understand the modes of bone healing and the conditions under which each occur

**Comment [DM32]:** Consider eliminating most of this till phase 3 and 4. Clinical medicine section may/may not have ortho emergencies overview.

**Comment [DM33]:** Delete

**34) Spine surgery**

- a. Understand clinical relevance of cervical and lumbar spinal nerve distributions Differentiate cervical radiculopathy from other causes of upper extremity pain
- b. Differentiate lumbar neurogenic claudication from other causes of lower extremity pain
- c. Identify common causes of cervical radiculopathy and myelopathy
- d. Identify common causes of lumbar radiculopathy

**Comment [DM34]:** Move to b/b

**35) Basic concepts in biomechanics and musculoskeletal rehabilitation**

- a. Define the following concepts
  - i. Biomechanical deficits
  - ii. "Agonists" and "antagonists"
  - iii. Concentric, eccentric and isometric muscle contraction
- b. Cite possible reasons for impaired range of motion and muscle weakness
- c. Describe kinetic chain principles

**36) Understand the interactions between the neurologic and musculoskeletal systems**

37) Compare and contrast the following organ specific and non-specific autoimmune diseases, their etiology, manifestations and treatments:

- a. Hashimoto's thyroiditis
- b. Primary myxoedema
- c. Thyrotoxicosis
- d. Pernicious anemia
- e. autoimmune atrophic gastritis
- f. Addison's disease
- g. premature menopause
- h. insulin-dependent diabetes mellitus
- i. Goodpasture's syndrome
- j. myasthenia gravis
- k. male infertility
- l. pemphigus vulgaris
- m. pemphigoid
- n. multiple sclerosis
- o. autoimmune hemolytic anemia
- p. idiopathic thrombocytopenic purpura
- q. primary biliary cirrhosis
- r. ulcerative colitis
- s. Sjögren's syndrome
- t. rheumatoid arthritis
- u. dermatomyositis
- v. mixed connective tissue disease
- w. systemic lupus erythematosus (SLE)

**Comment [DM35]:** To put autoimmune diseases into context.

**Comment [DM36]:** Repor/metab abcefgkh per AC

**Comment [DM37]:** To circulation, also neuro

- 1) List the genetic syndromes associated with soft tissue tumors
- 2) Describe the histologic features of malignant soft tissue tumors
- 3) Describe the clinical presentation, clinical course, and recommended treatment of the following soft tissue tumors:
  - a. Lipoma
  - b. Liposarcoma
  - c. Reactive psuedosarcomatous proliferations
  - d. Superficial fibromatoses
  - e. Deep Seated Fibromatosis (Desmoid tumors)
  - f. Fibrosarcoma
  - g. Dermatofibroma
  - h. Malignant fibrous histiocytoma
  - i. Rhabdomyosarcoma
  - j. Leiomyoma
  - k. Leiomyosarcoma
  - l. Synovial sarcoma
- 4) Identify the above soft tissue tumors histologically
- 5) Describe the elements and function of the motor unit, including:

**Comment [DM38]:** Cut and past to DR – move to DR but touch on here too ok

- a. Lower motor neuron
  - b. Axon of that LMN
  - c. Muscle fibers innervated by that LMN
- 6) Describe the structure and function of the elements of the peripheral nerve, including:

- a. Nerve fiber
- b. Schwann cells
- c. Myelin sheath
- d. Fascicle
- e. Myelinated fibers
- f. Unmyelinated fibers
- g. Internodes
- h. Nodes of Ranvier
- i. Sphingomyelins and glycoproteins
- j. Axoplasmic flow
- k. Epineurium
- l. Perineurium
- m. Endoneurium
- n. Perineurial barrier
- o. Blood-nerve barrier
- p. Nerve-cerebrospinal fluid barrier

**Comment [DM39]:** Cut and paste to DR, move to DR but briefly review here

- 7) Describe the structure and function of the elements of skeletal muscle, including:

- a. Myocytes
- b. Sarcolemma
- c. Satellite cells
- d. Myofilaments
- e. Myofibrils
- f. Sarcomeres
- g. Actin
- h. Myosin
- i. Z-bands
- j. Dystrophin
- k. T-tubule system
- l. Sarcoplasmic reticulum
- m. Sarcoplasm
- n. Type 1 and 2 muscle fibers
- o. ATPase staining of muscle fibers
- p. Muscle spindles/endomysium
- q. Perimysium
- r. Fasciculi
- s. Epimysium

**Comment [DM40]:** General muscle – add metabolism of muscle JL

- 8) Define and distinguish segmental demyelination and axonal degeneration.

- 9) Define and distinguish denervation atrophy and myopathy.

- 10) Describe the clinical presentation, clinical course, and pathophysiology of the following neuro-muscular disorders:

**Comment [DM41]:** Send to DR, but also touch on these here. (objs 8, 9, and

- a. Guillain-Barre Syndrome
- b. Hereditary motor and sensory neuropathy types I, II, and III
- c. Axonal degeneration and denervation muscle fiber atrophy
- d. Nerve regeneration and reinnervation of muscle
- e. Leprosy
- f. Diphtheria
- g. Neuropathies due to metabolic, toxic, traumatic, and malignant causes
- h. Infantile Motor neuron disease
- i. X-linked muscular dystrophy
- j. Autosomal muscular dystrophies
- k. Myotonic dystrophy
- l. Ion channel myopathies
- m. Congenital myopathies
- n. Lipid myopathies
- o. Mitochondrial myopathies
- p. Noninfections inflammatory myopathies, including:
  - i. Dermatomyositis
  - ii. Polymyositis
  - iii. Inclusion body myositis
- q. Thyrotoxic myopathy
- r. Ethanol myopathy
- s. Drug-induced myopathies
- t. Myasthenia gravis
- u. Lambert-Eaton Myasthenic Syndrome

11) Describe the following pathologic reactions of the muscle fiber to outside factors:

- i. Segmental necrosis
- ii. Vacuolation
- iii. Regeneration
- iv. Fiber hypertrophy

**Comment [DM42]:** Send to DR, and touch on this a bit too.

## **Content Experts**

### **Skin:**

### **Musculoskeletal:**

Leslie Cooper (FM Sports Med)  
 Liz Joy (FM Sports Med)  
 Pam Hansen (PM&R)  
 Amy Powell  
 Steven Aoki (Ortho)  
 Susan Stroud (ER)  
 Richard Perry (PM&R)  
 Julia Crim (Rad)

Christy Porucznik (Public health)

**Documents used:**

Ph Dx syllabus

AAMC article: Boyer MI. "Topics in Training: Objectives of Undergrad med ed in MS surg and medicine". Journal of Bone and Joint Surgery. 2005.

Medical Arts group's proposal

John Bezzant's dermatology organ systems course

Physical exam course

Histo course

Other schools' curricula

Robbins Pathologic basis of disease

Musculoskeletal organ systems course

**Longitudinal Threads:**

Cultural diversity and response to disease

Ethics and human values

Geriatrics

Health Care Delivery

Informatics

Nutrition

Public and Global Health

Women's Health

Translational research